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Effectiveness of Rabbit Fertilizer Application Time and Mycorrhizal Dosage on Chili (Capsicum Frutescens L.) Growth and Yield

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ABSTRACT

This study aimed to determine the best application time for rabbit manure with the best mycorrhizal dose. This study was a factorial experiment, using a Randomized Block Design (RBD) with two factors. The first factor had three levels: K1, K2, K3 = application time 7, 14, and 21 days before planting. The second factor had four mycorrhizal doses: M0, M1, M2, and M3 = without mycorrhizal application, 5 g, 10 g, and 15 g of mycorrhizal application per plant, and was replicated three times. Application time had no significant effect on any of the observed parameters. The highest fresh fruit weight per plant, measured as a single factor, was found in treatment M1, with 5 g per plant, at 237.49 g. The interaction term for oven-dry root weight per plant was 5.73 g.

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INTRODUCTION

Conditions are improving after the economic downturn caused by COVID-19. People are slowly starting to resume their activities. This has resulted in an increase in tourists visiting Bali, a global tourist destination, raising hopes for growth in tourism activity in Bali. The tourism sector, which Balinese people rely on to generate income from their businesses, has also boosted the agricultural sector, helping to meet the growing demand for agricultural products, particularly horticultural crops.

Chili peppers are a horticultural crop that is crucial to the lives of Indonesians. Market demand remains high year after year, both during the pandemic and during normal times. The availability of chili peppers in the market is still influenced by several factors, including low production levels, environmental conditions in production centers and natural disasters, increasing demand, and the increasing diversification of processed chili products by the community. The persistently high demand for chili peppers, while market availability is insufficient to meet demand, for both large chili peppers (Capsicum annuum L.) and small chili peppers (Capsicum frutescens L.), presents an opportunity to meet this demand through improved application of plant cultivation technology.

One way to implement cultivation techniques is through fertilization, which can be sourced from organic and inorganic materials. Fertilizers generally contain the nutrients N, P, and K, which are needed by plants. Sobir and Siregar (2014) stated that the main nutrients that must be available for plant growth and development require the addition of manure to improve soil structure and increase the number of soil organisms that are useful in the process of decomposing organic matter into substances available to plants, as well as retaining water in the soil.

Many people have raised livestock such as cows, goats, sheep, chickens, rabbits, and others that can be used as a source of organic fertilizer that can be processed into manure or compost for plants. The many types of solid organic fertilizers available on the market mean that those given to chili plants must contain nutrients that can contribute to the soil. Rabbit manure from rabbit farming can produce solid waste and if not processed can pollute the environment. Rabbit manure is one source that can be used as a solid organic fertilizer and if fermented, can become a source of nutrients for plants. Sajimin et.al. (2005) stated that rabbit manure has great potential to be used as manure because it contains higher nutrients than other livestock manure raw materials, namely C/N: (10–12%), P (2.20–2.76%), K (1.86%), and Ca (2.08%). Applying solid rabbit fertilizer at the correct dosage must be effective and efficient. Solid rabbit fertilizer, which has a relatively high nutrient content compared to other manures, will be problematic when market demand is high, as supply depends heavily on the limited amount of rabbit manure from rabbit farming, which is the raw material for the fertilizer.

The role of rabbit manure with good nutrient content is so great that not many have tried the right time for its application. Mukti et.al. (2017) from the results of his research showed that there was an effect between the treatment of the time interval for giving manure and the dose of urea fertilizer on plant length, number of leaves, leaf area, total fresh weight of plants, but there was no interaction on the fresh weight of the edible plant parts, fresh weight of the harvest, and the harvest index. The best harvest per hectare was 1.94 tons ha-1 in the P1W1 treatment, namely a combination of 1 week before planting cow manure, a urea dose of 100 kg ha-1 on kale plants.

Solid organic rabbit manure can be absorbed by chili plants better if applied to the soil in combination with fungi that have mutualistic symbiotic properties with plants. Many types of fungi are on the market, but will be tried with Mycorrhizae produced by several producers. Martin et.al. (2001); Soeharno et.al. (2017) (in Suharno et.al., 2020) stated that Arbuscular Mycorrhizal Fungi (AMF) play an important role in increasing the efficiency of nutrient absorption (especially phosphorus) and various micronutrients, able to increase the availability of nutrients absorbed by plants, including on marginal land. Researchers Eliyani et.al. (2022) on tomato plants found a dose of 20 g of Mycorrhizal biofertilizer more effective and showed an increase in fruit weight per plant of 81.7%, an increase in root length of 8.43% compared to the control. Furthermore, the results of Valentine et.al. (2017) found that the application of 9 g tan-1 of mycorrhizal was able to increase plant height, number of leaves, fresh root weight, dry root weight and total dry weight of melon plants. There is still a lack of research on the timing of application of solid rabbit manure combined with mycorrhizae on chili plants, which requires in-depth research.

The application of organic fertilizer from rabbit manure is one of the efforts that can be done to increase soil fertility, improve soil structure can maintain environmental sustainability and by providing the right dose of mycorrhizae, nutrient absorption can be increased and available to plants, giving the hope of the best results in cayenne pepper plants. The Warmadewa University Strategic Plan with an ecotourism vision must be supported by mastery and appropriate technology in the agricultural sector, including the use of solid organic fertilizer from rabbit manure and the appropriate application of mycorrhizae for the best results in quantity, quality and continuity.

LITERATURE REVIEW

Adding manure is one way to improve the growing environment for plants to enhance or optimize the benefits of fertilizer. Soils poor in organic matter will have reduced buffering capacity and fertilizer efficiency because some of it is lost from the root system. Manure in the soil has a positive effect on the soil's physical properties. Regularly applied manure will contain more organic matter and retain more water, thus creating groundwater, which is beneficial for plants because it facilitates the absorption of nutrients by plant roots for growth and development (Sari, 2011). According to Setyamidjadja (1986), the function of manure in agricultural soil is to increase organic matter (humus), improve soil fertility by adding plant nutrients, improve soil microbial life, and protect the soil from erosion.

The application of manure/organic fertilizer to the land before planting crops. Zulkarnain (2009) stated that the use of organic fertilizer needs to be increased and prioritized not only to improve soil fertility but also to help create a sustainable and safe agro-ecosystem for human life. Rabbit manure, like other animal manure, can be used as organic fertilizer. This manure must be managed so that it can be utilized by farmers. Organic fertilizer from rabbits is solid in the form of feces. One rabbit aged two months or older, or weighing 1 kg, will produce 28.0 g of soft feces per day, containing 3 g of protein and 0.35 g of nitrogen from bacteria, equivalent to 1.3 g of protein. (Spreaadburi and Yono C. Rahardjo: 1978 in Erika Dewi and Paiman, 2011).

Several researchers have proven the benefits of rabbit manure as a good organic fertilizer, Sajimin et.al. (2005) found that the use of rabbit manure on potato and cabbage plants increased production by an average of 23.5% compared to sheep manure, but was still lower than the treatment of farmers who used chemical fertilizers and chicken manure by 39.7%. Research by Wirajaya, et.al. (2022) showed that the application of solid rabbit manure had a significant effect on the variables of the number of fruits per plant, the fresh weight of fruit per plant and had a very significant effect on the production variable per hectare. The treatment of providing 30 tons of solid rabbit manure ha-1 gave the highest value, namely 6.10 tons, an increase of 11.93% and 9.71%, respectively, when compared to 10 tons ha-1 and 20 tons ha-1 on cayenne pepper. Khoir et.al. (2017) found from their research that the treatment of 100% rabbit compost + 100% NPK produced the highest dry weight of tubers at 23.07 tons ha-1 while the lowest was in the treatment without rabbit compost and without NPK at 12.26 tons ha-1. Rahmatika et.al. (2022) stated the results of their research that the application of organic rabbit manure to bok choy, and there was an effect of the dosage of rabbit manure on bok choy, with the best treatment results in the K3 treatment, namely a dose of 7500 kg of rabbit compost per hectare.

Wirajaya et.al. (2023) from the results of his research on cayenne pepper obtained "The highest production per hectare of chili plants was obtained in the rabbit fertilizer formulation with the addition of cow fertilizer at K3, namely 7.30 tons ha-1, not significantly different from K2 with a value of 6.92 tons ha-1 and significantly different from K1 with a value of 5.55 tons ha-1 and K3 experienced an increase of 5.5% and 31.53% respectively. Furthermore, Ruminta et.al. (2017) in his research on the Effect of N, P, K Fertilizer and Rabbit Organic Fertilizer on Sorghum (Sorghum bicolor [Linn] Moench) Yields in Jatinangor Rainfed Land found that the results of the rabbit manure treatment of 5 tons/ha gave the best independent effect on panicle length, panicle weight per clump and seed weight per plant. While the treatment of 5 tons/ha of manure + 7.5 ml of rabbit urine/plant gave the best independent effect on shedding yield.

The timing of manure application is crucial for plant utilization of the nutrients, as availability through the mineralization process takes time. Research by Mahmudah et.al. (2017) found that the application of azolla compost 7 days before planting on pakchoy resulted in higher plant height and leaf count compared to the application of 14 days before planting. Azolla compost dosage significantly affected plant height and leaf count at 28 days after planting. Azolla compost dosage of 6 tons ha^{-1} had higher plant height than 3 and 9 tons ha^{-1}, but had a leaf count that was not significantly different from 9 tons ha^{-1}.

Plant growth and development are greatly influenced by the ability of roots to absorb nutrients present in the soil, both those that exist naturally and through the provision of maintenance processes. One of the roles is mycorrhizae, which can form a symbiosis with various types of plants. Suharno et.al. (2020) stated that Arbuscular Mycorrhizal Fungi (AMF) play a crucial role in plant nutrient absorption through the hyphae/mycelium mechanism, while fungi obtain energy sources from the results of assimilation carried out by plants. Furthermore, it is stated that various studies have shown that P absorption by plants can be increased by the presence of mycorrhizae on plant roots, where it is possible for plant roots with mycorrhizae to explore the soil more widely and are able to take up phosphate (P) bound through the mycelia in the rhizosphere of plant roots.

Researchers Farhati et.al. (2017) stated that mycorrhizae play a significant role in the incubation period and the emergence of Fusarium wilt in melon plants, along with supporting parameters such as pH, temperature, humidity, and degree of infection. A dose of 15 g/plant when seeds are planted and a dose of 15 g/plant when seedlings are transplanted is the most effective dose for extending the incubation period of Fusarium wilt in melon plants. Furthermore, researchers Rahman et.al. (2019) showed that the application of mycorrhizae can increase phosphate nutrient uptake, which ultimately improves the growth and production of shallots.

Wicaksono et.al. (2014) concluded from their research that the Gigaspora margarita mycorrhiza is a suitable type of mycorrhiza to be applied in garlic cultivation and can increase growth including plant height, number of leaves, plant stem diameter, root length, and dry weight of plant stems. Furthermore, it was stated that the application of various types of organic fertilizers and mycorrhiza has not been able to increase the growth and yield of garlic plants. Marwani et.al. (2013) showed the results of their research that the application of MVA fungi significantly increased nutrient absorption, plant growth, and oil content of Jatropha curcas seeds. Mycorrhiza tested on rubber plants by Harahap et.al. (2018) showed that the provision of mycorrhiza had an effect on increasing the absorption of N and P nutrients compared to those not given mycorrhiza. Satibi and Budiyati (2025) found that the use of mycorrhizae alone resulted in higher yields than plants without mycorrhizae. A mycorrhizal treatment with a dose of 15 g per plant and 50% of the recommended dose of P fertilizer resulted in the best growth and yield in cayenne pepper plants. Root infection in mycorrhizae was shown to increase phosphate uptake, allowing mycorrhizae to reduce P fertilizer use by 25-50% and provide the best results. The results of this study indicate that the use of mycorrhizae is very appropriate in acidic soil conditions (ultisols) with low P availability or bound by Al or Fe.

METHODOLOGY

This research was a UV plastic house experiment located in the Plastic House of the Faculty of Agriculture, Science, and Technology, Warmadewa University, from March to October 2025, at an altitude of 25 meters above sea level. This research was a factorial experiment, with a Randomized Block Design (RBD) with two factors. The first factor was the timing of rabbit manure application with three levels: K1 = 7 days before planting, K2 = 14 days before planting, and K3 = 21 days before planting. The second factor was the mycorrhizal dose with four levels: M0 = no mycorrhizal application, M1 = 5 g mycorrhizal application plant-1, M2 = 10 g mycorrhizal application plant-1, and M3 = 15 g mycorrhizal application plant-1, with three replications. This resulted in a total of 36 treatment combinations. Observations will be made on the following variables: plant height, number of leaves, number of flowers, number of branches, number of fruits, fresh and oven-dry weight of fruit, fresh and oven-dry weight of stover, fresh and dry weight of roots.

RESEARCH RESULT AND DISCUSSION

Table 1. Significance of Effectiveness of Rabbit Fertilizer Application Time and Mycorrhizal Dose on the Growth and Yield of Chili Plants (Capsicum frutescens L)

No	Variable	Treatment		
		Timing Application (K)	Mycorrhiza (M)	Interaction (K x M)
1	Maximum plant height (cm)	ns	ns	ns
2	Number of leaves per plant (leaf)	ns	*	ns
3	Number of flowers formed per plant (florets)	ns	**	ns
4	Number of branches per plant (fruit)	ns	*	ns
5	Number of fruits harvested per plant (fruit)	ns	*	ns
6	Fresh weight of fruit per plant (g)	ns	*	ns
7	Dry weight of fruit per plant (g)	ns	**	ns
8	Fresh weight of compost per plant (g)	ns	ns	ns
9	Dry weight of the stover per plant (g)	ns	*	ns

10	Fresh weight of roots per plant (g)	ns	ns	ns
11	Root dry weight per plant (g)	ns	ns	**

Note: ns = no significant effect (P≥0.05)
**= highly significant effect (P<0.01)
*= significant effect (P<0.05)

Table 1 shows that the interaction between the time of rabbit manure application (K) and mycorrhizal dose (M) had no significant effect (P>0.05) on all observed variables except for the dry weight of roots per plant which had a very significant effect (P<0.01). The treatment of rabbit manure application time had no significant effect (P>0.05) on all observed variables. The mycorrhizal dose had a very significant effect (P<0.01) on the number of flowers formed per plant and the dry weight of fruit per plant and had a significant effect (P<0.05) on the number of leaves per plant, the number of branches per plant, the number of fruits per plant, the fresh weight of fruit per plant and the dry weight of stumps per plant. The treatment of mycorrhizal dose had no significant effect (P>0.05) on the variables of plant height, fresh weight of stumps per plant, fresh weight of roots per plant, and dry weight of roots per plant.

Table 2. Maximum Plant Height (cm), Number of Leaves Per Plant (Leaf), Number of Flowers Formed Per Plant (Florets), Number of Branches Per Plant (Fruit), Number of Harvested Fruits Per Plant (Fruit) Treatment of Rabbit Fertilizer Application Time (K) and Mycorrhizal Dose (M)

Variable / Treatment	Plant height (cm)	Number of leaves per plant (leaf)	Number of flowers formed per plant (florets)	Number of branches per plant (fruit)	Number of harvested fruits per plant (fruit)
Timing Application					
K1	52,44 a	160.67 a	274.67	133,67 a	86,75 a
K2	52,73 a	166.92 a	283.92	139,67 a	99,22 a
K3	53,82 a	162.08 a	282.00	137,25 a	79,08 a
BNT 5%	-	-	-	-	-
Mycorrhizal dose					
M0	51,71 a	155.00 a	262.89 a	129,67 a	78,56 a
M1	53,36 a	167.44 b	320.00 b	139,67 bc	99,22 b
M2	53,89 a	161.00 ab	263.22 a	133,33 ab	79,44 a
M3	53,03 a	169.44 b	274.67 a	144,78 c	87,44 ab
BNT 5%	-	9,34	27,87	9,62	12,57

Description: *The average value followed by the same letter in the same treatment means that it is not significantly different at the 5% BNT test level.*

Table 3. Average Fresh Weight of Harvested Fruit Per Plant (G), Dry Weight of Harvested Fruit Per Plant (G), Fresh Weight of Stump Per Plant (G), Dry Weight of Stump Per Plant (G), Fresh Weight of Roots Per Plant (G) Treatment of Rabbit Fertilizer Application Time (K) and Mycorrhizal Dose (M)

Variable / Treatment	Fresh weight of harvested fruit per plant (g)	Dry weight of harvested fruit per plant (g)	Fresh weight of stump per plant (g)	Dry weight of stump per plant (g)	Fresh weight of roots per plant (g)
Timing Application					
K1	204,47 a	40,62 a	224,32 a	41,10 a	67,18 a
K2	222,33 a	38,10 a	225,01 a	42,01 a	70,92 a
K3	192,47 a	35,42 a	224,41 a	45,47 a	68,03 a
BNT 5%	-	-	-	-	-
Mycorrhizal dose					
M0	183,09 a	35,02 a	223,60 a	39,39 a	65,22 a
M1	237,49 b	44,21 b	228,66 a	47,02 b	69,11 a
M2	197,13 a	35,15 a	220,52 a	41,07 ac	66,89 a
M3	207,97 ab	37,82 ab	225,53 a	43,95 bc	73,61 a
BNT 5%	31,85	4,55	-	4,28	-

Description: *The average value followed by the same letter in the same treatment means that it is not significantly different at the 5% BNT test level.*

Table 4. Effect of Interaction (Kxm) on Dry Root Weight Per Plant (G) on the Treatment of Time of Administration and Dose of Mycorrhizae

Treatment	M0		M1		M2		M3	
K1	3,88	B	5,19	A	5,12	AB	5,09	AB
	b		a		ab		a	
K2	4,46	A	4,83	A	4,11	A	5,36	A
	ab		a		b		a	
K3	5,45	A	5,73	A	5,44	A	3,38	B
	a		a		a		b	
BNT 5%	1,28							

Note:

1. Numbers followed by the same lowercase letter in the same column are not significantly different at the 5% LSD level.
2. Numbers followed by the same uppercase letter in the same row are not significantly different at the 5% LSD level.

Fresh fruit weight per plant seen from a single treatment at the application time of 14 days before planting (K2) obtained a value of 222.33 g which was not significantly different from the application time of 7 days before planting and 21 days before planting, namely 204.47 g and 192.47 g. Although the difference was not significant between treatments, the higher yield reflected by the fresh weight of harvested fruit was statistically supported by the increase in the number of leaves per plant (r = 0.809**), the number of harvested fruits per plant (r = 0.983**), the fresh weight of the stover per plant (r = 0.861**), the fresh weight of the roots per plant (r = 0.810**). The number of leaves per plant at the application time of 14 days before planting (K2) obtained 166.92 pieces which were not significantly different from the application time of 7 days before planting (K1) and the application time of 21 days before planting (K3) namely 160.67 pieces and 162.08 pieces (Table 2). The number of harvested fruits per plant obtained at the application time 14 days before planting (K2) was 92.67 fruits, which was not significantly different from the application time 7 days before planting (K1) and 21 days before planting (K3) which were 86.75 fruits and 79.08 fruits (Table 2). The fresh weight of the stover per plant at the application time treatment of 14 days before planting (K2) was obtained at 225.01 g, which was not significantly different from the application time of 7 days before planting (K1) and the application time of 21 days before planting (K3) which were 224.32 g and 224.41 g, respectively (Table 3). The fresh weight of the roots per plant at the application time treatment of 14 days before planting (K2) was obtained at 70.92 g, which was not significantly different from the application time of 7 days before planting (K1) and the application time of 21 days before planting (K3) which were 67.18 g and 68.03 g (Table 3).

Fresh fruit weight per plant seen from a single factor in the mycorrhizal dose treatment of 5 g per plant (M1) obtained a weight of 237.49 g, which was not significantly different from the mycorrhizal dose treatment of 15 g per plant (M3) of 207.97 g but significantly different from the mycorrhizal dose of 10 g per plant (M2) and without mycorrhizal administration (M0) of 183.09 g and 197.13 g, respectively. The occurrence of real and non-real differences between treatments, higher yields can be reflected by the variable of fresh fruit weight per plant statistically supported by the increase in the number of leaves per plant (r=0.778*), number of flowers per plant (r=0.954**), number of fruits per plant (r=0.976**), oven dry weight of fruit per plant (r=0.968*), fresh weight of stover per plant (r=0.984**), oven dry weight of roots per plant (r=0.826**) (Table 6). The number of leaves per plant in the treatment of 15 g mycorrhizal dose (M3) was obtained, namely 169.44 strands, which was not significantly different from the administration of 5 g mycorrhizal doses (M1) and 10 g per plant (M2) which were obtained respectively 167.44 strands and 161.00 strands but significantly different from without administration of mycorrhizal dose (M0) which was 155.00 strands (Table 2). Mycorrhizae increase the capacity of plants to absorb water and nutrients which are very important for cell division and plant growth and can stimulate vegetative growth of plants by increasing nutrient absorption, especially nutrients that are very much needed in the vegetative phase so that it can stimulate plant growth, especially leaves. The highest number of flowers per plant was obtained when the mycorrhizal dose was 5 g per plant (M1), which was significantly different from the mycorrhizal dose of 10 g (M2), the mycorrhizal dose of 15 g (M3) and without mycorrhizal administration (M0), which were 263.22, 274.67 and 262.89 flowers, respectively (Table 2). The highest number of harvested fruits per plant was obtained at a dose of 5 g per plant (M1) which was 99.22 fruits, which was not significantly different from a dose of 15 g of mycorrhiza per plant (M3) which was 87.44 fruits and without mycorrhiza (M0) and a dose of 10 g of mycorrhiza per plant were significantly different with the number of 78.56 fruits and 79.44 fruits, respectively (Table 2). The oven dry weight of fruit per plant in the treatment of a dose of 5 g of mycorrhiza per plant (M1) obtained a weight of 44.21 g, which was not significantly different from a dose of 15 g of mycorrhiza per plant (M3) of 37.82 g but significantly different from without mycorrhiza (M0) and a dose of 10 g of mycorrhiza per plant (M2) of 35.02 g and 35.15 g (Table 3). The fresh weight of stover per plant of mycorrhizal dose treatment of 5 g per plant (M1) was obtained 228.66 g which was not significantly different from the treatment of mycorrhizal dose of 10 g per plant (M2), mycorrhizal dose of 15 g per plant (M3), without mycorrhizal (M0) with a weight of 220.52 g, 225.53 g and 223.60 g respectively (Table 3). The oven dry weight of stover at the administration of mycorrhizal dose of 5 g per plant (M1) was obtained 47.02 g which was not significantly different from the mycorrhizal dose of 15 g per plant (M3) weighing 43.95 and significantly different from the mycorrhizal dose of 10 g per plant (M2) and without mycorrhizal (M0) with a weight of 41.07 g and 39.39 g per plant respectively (Table 3). The significant role of mycorrhizae for plants was confirmed by researchers Adetya *et.al.* (2018) whose research results showed that cultivating cayenne pepper in sandy soil with the addition of 6 g of mycorrhizae was able to increase growth yields but could not be compared to the growth of *C. frutescens* planted in garden soil. Root infections and the highest number of spores were found in cayenne pepper with the addition of 10 g of mycorrhizae.

Based on the results of statistical analysis, it shows that the interaction between application time and mycorrhizal dose (KXM) has a very significant effect ($P < 0.01$) on the dry weight of root ovens per plant. The highest dry weight of root ovens per plant was obtained in the interaction between the application time 21 days before planting with a dose of 5 g per plant (K3M1) which is 5.73 g, an increase of 69.53% when compared to the treatment of application time 21 days before planting with a dose of mycorrhizal 15 g per plant of 3.38 g (K3M3) (Table 4). The increase in dry weight of root ovens per plant can indicate an interaction between the treatment of application time and mycorrhizal dose which is able to increase plant weight in fresh fruit weight per plant which is supported by the increased function of physiological parts of chili plants due to the role of rabbit manure with nutrient content that can be absorbed more effectively through the extension of root hyphae. Suharno *et.al.* (2020) stated that organic matter is one of the important components of soil besides inorganic matter, water and air. Furthermore, it was stated that the number of AMF spores appeared to be closely related to the organic matter content in the soil. Researchers Chairunnisak *et.al.* (2023) found that providing organic matter to cayenne peppers can also accelerate flowering age. Furthermore, it was stated that there was a very real interaction between organic matter and mycorrhizal dosage with the best treatment combination obtained in the treatment of soil + chicken manure (1:1) with a mycorrhizal dosage of 5 g. Herliana *et.al.* (2018) from their research found that 10g/plant of mycorrhizal biofertilizer was the best dose for the variables of increasing the number of roots and the percentage of mycorrhizal infection of Dendrobium orchids, respectively, as many as 20.78 roots and 64.44%. From the support of the results of researchers by utilizing mycorrhizae, it shows the importance of the role of mycorrhizae in helping root growth, which can increase the absorption of nutrients in the soil for the development and growth of plant organs, resulting in increased yields.

Table 5. Correlation Coefficient Value between Rabbit Fertilizer Application Times on Chili Plants (K)

	1	2	3	4	5	6	7	8	9	10	11
1	1										
2	-0.103ns	1									
3	0.504ns	0.807**	1								
4	0.309ns	0.914**	0.977**	1							
5	-0.795*	0.685*	0.123ns	0.331ns	1						
6	-0.668ns	0.809**	0.305ns	0.501ns	0.983**	1					
7	-0.955**	-0.198ns	-0.739*	-0.578ns	0.578ns	0.416ns	1				
8	-0.197ns	0.995**	0.747*	0.871**	0.752*	0.861**	-0.104ns	1			
9	1.000**	-0.108ns	0.500ns	0.304ns	-0.798**	-0.672ns	-0.953**	-0.203ns	1		
10	-0.104ns	1.000**	0.806**	0.914**	0.686ns	0.810**	-0.197ns	0.996**	-0.110ns	1	
11	0.804**	-0.674*	-0.108ns	-0.317ns	-1.000**	-0.980**	-0.590ns	-0.742*	0.807**	-0.675ns	1

r (0,05,9,1) = 0,666 r (0,01,9,1) = 0,798

Table 6. Correlation Coefficient Values Between Mycorrhizal Doses in Chili Plants (M)

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
1	1										
2	0.566ns	1									
3	0.281ns	0.588ns	1								
4	0.397ns	0.971**	0.463ns	1							
5	0.320ns	0.746*	0.974**	0.650ns	1						
6	0.513ns	0.778*	0.954**	0.647ns	0.976**	1					
7	0.294ns	0.660ns	0.995**	0.549ns	0.992**	0.968**	1				
8	-0.091ns	0.599ns	0.875**	0.588ns	0.909**	0.798**	0.899**	1			
9	0.471ns	0.862**	0.917**	0.765*	0.977**	0.984**	0.949**	0.835**	1		
10	0.315ns	0.907**	0.271ns	0.977**	0.481ns	0.470ns	0.366ns	0.460ns	0.612ns	1	
11	0.585ns	0.362ns	0.837**	0.146ns	0.743*	0.826**	0.797*	0.469ns	0.713*	-0.062ns	1
	r (0,05,9,1) = 0,666					r (0,01,9,1) = 0,798					

Table 7. Correlation Coefficient Value of Interaction Between Rabbit Fertilizer Application Time and Mycorrhizal Dose on Chili Plants (K x M)

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
1	1										
2	0.196ns	1									
3	0.379ns	0.229ns	1								
4	0.185ns	0.720*	0.280ns	1							
5	-0.279ns	0.333ns	0.581ns	0.186ns	1						
6	-0.074ns	0.378ns	0.565ns	-0.023ns	0.872**	1					
7	0.046ns	0.233ns	0.702*	0.025ns	0.723*	0.758*	1				
8	0.300ns	0.272ns	0.499ns	0.121ns	-0.026ns	0.199ns	0.315ns	1			
9	0.322ns	0.457ns	0.680*	0.348ns	0.353ns	0.451ns	0.345ns	0.438ns	1		
10	0.521ns	0.203ns	0.485ns	0.096ns	0.097ns	0.294ns	0.267ns	0.674ns	0.392ns	1	

11	0.187ns	0.146 ns	0.039 ns	0.255ns	0.082ns	-0.085ns	0.122 ns	-0.557ns	-0.135ns	-0.568ns	1
	r (0,05,9,1) = 0,666					r (0,01,9,1) = 0,798					

Description:

1. Plant height.
2. Number of leaves per plant.
3. Number of flowers per plant.
4. Number of branches per plant.
5. Number of fruits per plant.
6. Fresh fruit weight per plant.
7. Dry fruit weight per plant.
8. Fresh stalk weight per plant.
9. Dry stalk weight per plant.
10. Fresh root weight per plant.
11. Dry root weight per plant.

ns = No significant effect (P>0.05)
* = Significant effect (P<0.05)
** = Very significant effect (P<0.01)

CONCLUSIONS AND RECOMMENDATIONS

From the research results, the following conclusions can be drawn:

1. The interaction between the timing of rabbit manure application and the mycorrhizal dose had no significant effect (P>0.05) on all observed variables, except for the oven-dry root weight per plant, which had a highly significant effect (P<0.01). The highest oven-dry root weight per plant was obtained from the interaction between the application time 21 days before planting with a dose of 5 g per plant (K3M1), namely 5.73 g, an increase of 69.53% when compared to the treatment of application time 21 days before planting with a dose of 15 g of mycorrhizae per plant (K3M3) of 3.38 g.
2. The application times of rabbit fertilizer 7, 14, and 21 days before planting did not differ significantly in all observed variables.
3. The mycorrhizal dose yielded the highest value for the fresh weight of harvested fruit per plant at a mycorrhizal dose of 5 g per plant (M1), at 237.49 g. This was not significantly different from the 15 g per plant (M3) at 207.97 g, with M1 experiencing a 14.19% increase. M1 was significantly different from the no mycorrhizal dose per plant (M0) and the 10 g per plant (M2) with values of 183.09 g and 197.13 g, respectively, with M1 experiencing an increase of 29.44 (7%) and 40.98%.

The contribution/implementation of the results of this study is that the time for applying rabbit fertilizer should be 7 days before planting and the mycorrhizal dose should be 5 g per plant in a polybag.

ADVANCED RESEARCH

Further research is needed to determine the timing of rabbit manure application and mycorrhizal dosage in the field under different conditions to achieve the best chili yields.

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