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Effect of Magnetism on the Germination and Growth of Eggplant Seedlings

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Abstract: **The study was conducted to determine the effect of magnetism on the germination and growth of eggplant seedlings, specifically aimed to determine the effect of the four magnetic treatment orientation if it enhances the germination and growth of eggplant seedlings and to find out the effect of the four (4) magnetic treatment if there are significant result on plant height, leaf length and diameter, shoot and root length, shoot and root biomass, total biomass and root-shoot ratio,.**

Randomized Complete Block Design (RCBD) was used in the study. There were 3 blocks of soil placed on a polyethylene plastic divided into 5 treatments as follows: T_0 – Control, T_1 – North / South, T_2 – East / West, T_3 – Northwest / Southeast, T_4 – Northeast / Southwest.

Result revealed the following findings: as to seed germination, significant effect was observed at 6 and 7 days after sowing (DAS) in favor of the seeds treated with amgnets while not significant differences was observed at 8,9 and 10 days after sowing. As to the plant height no significant differences among the treatment mean at 11, 18, and 25 days after sowing. Significant result was revealed to the 1st (first) true leaf diameter at 11 DAS while no significant result at 18 and 25 DAS. Significant effect was noted on the 1st leaf length at 25 DAS. There was a significant increase on the second true length and diameter. Significant differences was noted on the shoot length, average shoot weight, root biomass and total ovendry biomass while insignificant on root-shoot ratio.

Based on the findings T_2 with East West orientation of magnets found out to be the best treatment followed by T_3 with Northwest Southeast orientation and T_4 with a Northeast / Southwest and T_1 North / South.

Keywords: **Magnetism, Seed Germination, Significant Effect, Growth of Eggplant Seedlings.**

1. INTRODUCTION

Vegetable farming is the growing of vegetables for human consumption. Traditionally, it was done in the soil in small rows or blocks, often primarily for consumption on the farm, with the excess sold in nearby towns. Later, farms on the edge of large communities could specialize in vegetable production, with the short distance allowing the farmer to get his produce to market while still fresh**.**

The Solanaceae is a family of flowering plants, many of which are edible [1]; while others are poisonous [2] (some have both edible and toxic parts). The Solanaceae family is characteristically ethnobotanical, that is, extensively utilized by humans [3]. It is an important source of food [4], spice and medicine [5]

Eggplant *(Solanum melongena L.*) is one of the most popular vegetable crops in the Philippines[6]. Eggplant can be grown in any type of soil.[7] It thrives best, however, in sandy loam and clay loam soils[8]. And moisture supply and good drainage are essential for more successful production. Eggplant required a long, warm, growing season.

The raising of eggplant seedlings is practically the same as in raising tomato seedlings[9]. Since eggplant is tenderer than tomato, more care should be given to produce strong, stocky and slightly hardened seedlings for transplanting in the fields.

Because of the fact that eggplant requires more heat than tomato[10], sowing of the seeds should be delayed until the weather becomes warmer as the seedlings develop. The seedlings are ready for transplanting in the field 45 to 50 days from sowing.

The influence of the geomagnetic field [11]on the growth of plants was scientifically established for the first time in 1862 by the French chemist Louis Pasteur (1822-1985), during his experiments on fermentation, when he discovered that the Earths magnetic field had a stimulating effect on that process.

Because of the earth's gravity, the roots grow down and the stem grows up. The gravity is a stimulus. Geotropism [12]is the plant's way of responding. The roots going downward are positive because they are going toward the stimuli. The stem is negative because it is moving away from the stimulus. Plants grow at a slow rate toward their stimuli. When the plant grows toward the sun its called phototropism. The stem is what grows toward the sunlight. Chemical compounds called auxins control tropisms. One kind of auxins make growth cells. If one side of the plant is lighted then the auxins move away from that side. That makes the plant grow more on the shaded side and the unequal mass makes the plant bend toward the sun.

Hence the study was conducted to determine the effect of magnetism on the germination and growth of eggplant seedlings.

Objectives of the study:

1. To determine the effect of the 4 magnetic treatments with different orientation of magnets if it enhance the germination and growth of eggplant seedlings.

2. To found out the effect if there are significant effect of magnetic orientations on germination and growth of eggplant seedlings in terms of plant height, leaf length and diameter, shoot and root length, shoot and root biomass and root shoot ratio when treated with magnets.

Time and Place of the study:

This study was conducted on ASC's Greenhouse at San Isidro Sur, Luna Apayao, from January 04, 2016 to January 27, 2016

2. MATERIALS AND METHODS

Materials:

The materials and equipments used in this study are Polyethylene (12 x 24), Eggplant seedlings (Jackpot), Tables, Bar Magnets (.50 x 4 inches), Vernier Caliper, Ruler, Triple beam balance, Manila paper.

Methods:

Soil and Potting Media Preparation, the soil composed of 40 % sand and 30% compost and 30 %garden soil and placed in a polyethylene (12x24).

Experimental Layout, after the preparation of the planting materials, the polyethylene was laid out in Randomized Complete Block Design (RCBD), the polyethylene were place into table into 3 blocks for the allocation of the 5 treatments as follows. T_0 – Control, T1 – North / South, T_2 – East / West, T_3 – Northwest / Southeast, T_4 – Northeast / Southwest.

Sowing Seeds, Sowing the seeds was done manually, and drill method was used in sowing eggplant seedlings, sowing them in a polyethylene having a distance of 1 inch from the magnet at 20 seeds per furrow equivalent to 40 seeds per pot of polyethylene.

Control of Pest and Diseases, during the germination period, the table was applied with grease to prevent the occurrence of ants that will eat the seeds. During the vegetative stage, cutworms occurred and they were controlled immediately by spraying pesticide at a recommended rate.

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Watering, watering was done manually once a day to provide moisture needed by the plant for their growth and development.

Weeding, hand weeding was done occasionally to eliminate weed to avoid the competition of nutrient that is needed by the plant.

Data Gathered:

1. Average Number of Germinated seedlings, this was done by counting the number of seed germinated on the planting media for 5 days of germination period.

2. Average Height of Plant, ten samples was measured from the base to the tip of the longest leaf using vernier caliper at 11 DAS, 18 DAS and 25 DAS.

3. Average Length of 1st Trueleaf, and 2nd Trueleaf was done by measuring the tip of a leaf up to the base of the leaf using vernier caliper at 11 DAS, 18 DAS and 25 DAS then divided by the number of sample plants.

4. Average Diameter of 1st Trueleaf, 2nd True Leaf was done by measuring the leaf center horizontally to the both ends of leaf margin at 11 DAS, 18 DAS and 25 DAS then divided by the number of sample plants.

5. Average Shoot Length. This was done by measuring the tip of the youngest shoot up to the root collar then divided by the number of sample plants.

6. Average Root Length, this was done after the seedlings were uprooted and the roots were cleaned and measured from the root collar up to the tip of the primary root with the use of a foot rule.

7. Average Shoot Weight (grams) this was done by weighing the shoots using triple beam balance.

8. Average Root Weight (grams) this was done by weighing the roots using triple beam balance

9. Average Ovendry Shoot Biomass (grams) this was done after drying the shoots to the oven in 8 hours, then shots and roots weighed in the triple beam balance, and then divided by the number of sample plants.

10. Average Ovendry Root Biomass (grams) this was done after drying the roots to the oven in 8 hours, then shots and roots weighed in the triple beam balance, and then divided by the number of sample plants.

11. Average Total Biomass, this was done by weighing the ovendried roots and shoots using a triple beam balance.

12. Root – Shoot ratio, the length of the roots and shoot were measured using a foot rule and was computed using the formula:

Root – shoot = Root length (cm) / shoot length (cm)

13. Cost and Return Analysis, the cost and return analysis was computed by gross income minus all the expenses incurred during the operation using the formula:

$$ROI = \frac{\text{Net Income}}{\text{Total Cost}} \times 100$$

3. OBSERVATION, RESULT AND DISCUSSION

General Observation:

During the germination period at 6 Days after sowing T_2 where the first treatment to obtained a high percentage of germination rate, also at 7 days T_2 where the first followed by T_1 and T_3 while at 8 DAS T_2 got a 100% germination rate from B_1 to B_3. And from 9 DAS aside from T_2 who got a 100 % germination rate also T_1 and T_3 from B_3.then false leave begun to enlarge followed by a small shoot called the 1st true leaf. And enlargement of 1st true leaf where at 11 days after sowing and during its 18 DAS 1st true leaves grew large, its leaf length and diameter is larger than the control plants followed by the initiation of 2nd true leaves, were magnetic treatments significantly increases in length and diameter than the control plants. Magnetic treatments were bigger in terms of leaf length and diameter than the control plant.

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It was observed that treatments treated with magnets were significantly increases the growth and development especially in leaf area, also to its shoot length and shoot weight root biomass and total biomass than those not treated with a magnet. It means of all the magnetic treatment, they increase significantly in growth performance than those untreated or the control.

Occurrence of Pest and Diseases:

19 days after sowing cutworms occurred in B_1T2, this was controlled by spraying cymbush at a recommended rate also during its 24 days after sowing cutworms again occurred specially at T_2B_1 also to T_1B_3 and immediately controlled by spraying cybush at a higher concentration

Table 1 Average Seedlings Germination in 6 DAS (cm)

Treatment	Days of Sowing				
	Treatment Mean				
	6 DAS	7 DAS	8 DAS	9 DAS	10 DAS
T_0	7	30.67	36.67	38.67	39
T_1	7.66	32	38	39	39.33
T_2	13.66	36	39	40	40
T_3	11.66	32	38	38.67	39
T_4	10	31.67	38	39	39.33
Grand Mean	10	32.467	37.73	39.068	39.46

The table shows the evaluations of treatment mean, at 6days after sowing, where T_2 obtained the highest number of germinated seedlings, followed by T_3, T_4 and T_1 while T_0 lowest.

Also to 7 days after sowing T_2 obtained the highest followed by T_1 and T_3 and then T_4. As to 8 days after sowing T_2 obtained the highest number of seedlings germinated followed by T_3 and T_1; T_4 and T_0 were the lowest among the treatment mean. T_2 obtained the highest number of germinated in its 9 days after sowing followed by T_1 and T_4; were T_3 and T_0 got the same treatment mean as the lowest.

While as to the 10 days after sowing T_2 obtained 100% of germination rate of 40 seedlings, followed by T_1 and T_4 with a mean of 39 seedlings germinated, and T_0 and T_3 got the lowest mean of 39.

As 8 DAS to 10 DAS, there where no significant findings among the treatments. Plants seed germination grows faster with treated magnets than those of the control plants. Magnets enhances the circulation of ions in the body that helps in the formation of hemoglobin [14, 15] the same as through with plants it enhances the metabolism causing them to grow faster from the absorption of nutrient in the soil, specifically to iron; that iron is much needed in large amount in the formation of chlorophyll [16]; while chlorophyll is a chemical that gives plants their green color and traps light energy for the process of photosynthesis for the growth of plants [17].

Table 2 Average Plant Height (cm)

Treatment	Plant Height		
	Treatment Mean		
	11 DAS	18 DAS	25 DAS
T_0	3.75	5.23	9.85
T_1	3.88	5.67	10.44
T_2	4.07	6.58	11.85
T_3	3.97	5.60	10.35
T_4	3.98	5.98	10.25
Grand Mean	3.93	5.81	3.54

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Plant height of eggplant seedlings as affected by different orientation of magnets not significantly influenced the height of the plant at 25 days after sowing base form the analysis of variance at appendix table 2c. also to 11 and 8 days after sowing.

T_2 found out to be the tallest with an average mean of 4.07cm followed by T_4, T_3 and T_1, with a mean of 3.98, 3.97 and 3.88 respectively. T_0 was the lowest in height with a mean of 3.75cm.

And to 18 days after sowing, T_2 obtained the tallest height with an average mean of 6.58 followed by T_4, T_1 and T_3 with a mean T_0 obtained 5.23 as the lowest among the treatment mean.

T_0 also obtained lowest average of 9.85 while 25 days after sowing where T_2 obtained the highest mean of 11.85 cm followed by T_1, T_3 and T_4 with a mean of 10.44, 10.35 and 10.25 respectively. And to the average plant height at 25 DAS as the graph shows at appendix table 15 rapid growth had been attained at 25 DAS while not significant at 11 and 18 DAS base from their analysis of variance at appendix table 2a, 2b and 2c.

Table 3 Average 1st True Leaf Length (cm)

Treatment	1st True Leaf Length		
	Treatment Mean		
	11 DAS	18 DAS	25 DAS
T_0	1.23	2.17	6.09
T_1	1.51	2.47	6.58
T_2	1.63	2.79	7.24
T_3	1.45	2.36	6.77
T_4	1.43	2.41	6.61
Grand Mean	1.45	2.44	6.66

1st true leaf length of eggplant seedlings shows significant increase in its length, especially at 25 days after sowing as affected by the different orientation of magnets

As the graph table shows at appendix table 16, at 11 Days after sowing that T_2 attained the highest mean of 1.63cm as to first true leaf length with an orientation of East west, followed by T_1, T_3 and T_4 while T_0 attained 1. 23cm as the lowest among the treatments mean. Also to its 18 DAS T_0 were the lowest with an average mean of 2.17 whileT_2 obtained 2.79cm average mean as the highest followed by T_1, T_4 and T_3 with an average mean of 2.47, 2.41 and 2.36 respectively . And to 25 Days after sowing where T_2 obtained as the highest average mean of 7.24 followed by T_3, T_4 and T_1 and T_0 got 6.09 as the lowest among treatment means, analysis of variance showed no significant result at at 11, 18 and 25 Days after sowing

Table 4 Average 1st True Leaf Diameter (cm)

Treatment	1st True Leaf Diameter		
	Treatment Mean		
	11 DAS	18 DAS	25 DAS
T_0	0.77bc	1.52	2.81
T_1	0.86b	1.61	2.91
T_2	0.95a	1.79	3.16
T_3	0.90ab	1.65	3.04
T_4	0.87ab	1.63	2.87
Grand Mean	0.87	1.64	2.96

Analysis of variance of first true leaf diameter as affected by different orientation of magnets. A highly significant increase in the true leaf length at 11 DAS base from the analysis of variance at appendix table 4a.

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T_0 with a mean of 0.77 found out to be the shortest as the graph shows, while T_2 obtained 0.95 as the highest in leaf diameter to its 11 days after sowing as influenced by the east west orientation of magnets significantly increases its leaf diameter basing from the analysis of variance followed by T_3, T_4 and then T_1 . And to 18 days after sowing where T_2 with an average of 1.79 as the highest mean followed by treatment T_3, T_4 and T_1 while T_0 attained 1.52 to be the lowest among the treatment means.

Also from 25 days after sowing where T_0 obtained 2.81 averages mean as the lowest while T_2 obtained 3.16 as the highest followed by T_3, T_1 and T_4. In relation to the true leaf diameter at 25 days after sowing as affected by the different orientation of magnets there where no significant gleaned in its true leaf diameter.

At 11 Days after Sowing, T_0 found out to have the shortest leaf diameter with a mean of 0.77 while T_2 gleaned to have the longest diameter with a mean of 0.95. Analysis of variance revealed highly significant result. DMRT states that T_2 is not significantly different from T_4 and T_3 but significantly different over T_1 while T_0 not significantly different over T_1.

Analysis of variance showed no significant differences on average 1st true leaf diameter 18 and 25 days after sowing (DAS)

Table 5 Average 2nd True Leaf Length and Diameter (cm)

Treatment	2nd True Length and Diameter	
	Treatment Mean	
	Length	Diameter
T_0	5.05b	2.92c
T_1	5.85ab	3.29bc
T_2	7.29a	4.10a
T_3	6.14ab	3.41ab
T_4	6.09ab	3.73b
Grand Mean	6.08	3.49

As to the second true leaf length and diameter, both leaf length and diameter where significantly influenced by magnetism. Analysis of variance revealed that both true leaf length and diameter as affected by the different orientation of magnets found out to be significant at 25 DAS base appendix table 5a and 5b where;

T_2 obtained a mean of 7. 29 cm as the highest from 2nd true leaf length followed by T_4, T_3 and T_1 with mean of 6.14, 6.09 and 5.85 respectively while T_0 obtained 5.05 as the lowest among treatments significant result found at the analysis of variance as to its 2nd trueleaf length as stated from DMRT that T_2 are not significantly different over T_3 and T_4 while T_1 is significantly different from T_0 but significant over T_2.

As to its 2nd true leaf diameter where T_0 obtained 2.92 cm as the lowest while T_2 obtained 4.10cm to be the highest among the treatment mean followed by T_4, T_3 and T_1. with a mean of 3.73, 3.41 and 3.29 respectively. Analysis of variance showed significant differences among treatment mean DMRT states that T_2 is not significantly different from T_3 while T_4 is not significant different from T_1 while significantly different from T_0.

Table 6 Average Shoot Length (cm)

Treatment	Shoot Length
	Treatment Mean
T_0	5.01c
T_1	5.68b
T_2	6.54a
T_3	5.73ab
T_4	5.95ab
Grand Mean	5.78

The Result of the study to the Shoot length as affected by the different orientation of magnetic treatments, Analysis of variance revealed significant result in its shoot length base from appendix table 9, where;

T_2 obtained the tallest with an average of 6.54 cm, followed by T_4, T_3 and T_1 with a mean of 5.95, 5.73 and 5.68 respectively while T_0 where the smallest with a mean of 5.01cm

Using DMRT it is found out that T_2 is not significantly different to T_4 but significant over T_3 while T_1 is significantly different from T_0.

Table 7 Average Root Length (cm)

Treatment	Root Length
	Treatment Mean
T_0	4.46
T_1	5.06
T_2	5.47
T_3	4.81
T_4	5.05
Grand Mean	4.97

Table shows the root length of the eggplant seedlings. The mean ranges from 4.46 to 5.47 where T_2 where the longest and T_0 obtained the smallest root length.

Analysis of variance shows no significant differences among treatment means. This revealed that magnetism did not significantly affect the root length of eggplant seedlings.

Table 8 Shoot weight (grams)

Treatment	Shoot Weight
	Treatment Mean
T_0	0.053bc
T_1	0.065bc
T_2	0.215a
T_3	0.069b
T_4	0.167ab
Grand Mean	0.114

Shoot weight of eggplant seedlings as affected by different orientation of magnets, where magnetic treatments significantly heavier in weight than the control plants as shown on appendix table 10.

T_2 gained the heaviest mean, from the graph T_2 weighed higher than the other with an average of 0.215grams followed by T_4, T_3 and T_1 while T_0 gained a 0.053 grams as the lowest base from the graph.

As shown on the analysis of variance there were significant differences among the treatment mean. DMRT states that T_2 is not significantly different from T_4 but significantly different to T_3 while T_3 is not significantly different from T_1 and T_0.

Table 9 Root Weight (grams)

Treatment	Root Weight
	Treatment Mean
T_0	0.053
T_1	0.065
T_2	0.215
T_3	0.069
T_4	0.167
Grand Mean	0.114

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As the analysis of variance revealed that no significant result revealed as influenced by the different orientation of magnets. The graph revealed that T_2 gave the heaviest weight with mean of 0.215 followed by T_4 , T_3 and T_1 with a mean of 0.167, 0.069, and 0.065 respectively, where T_0 obtained an average mean of 0.053 as the lightest among the treatment mean.

The table shows the root weight of the eggplant seedlings. The mean ranges from 4.46 to 5.47 where T_2 was the longest and T_0 obtained the smallest root length

Analysis of variance shows no significant differences among treatment means.

Table 10 Ovendry Root Biomass

Treatment	Root Biomass
	Treatment Mean
T_0	0.004
T_1	0.006
T_2	0.006
T_3	0.004
T_4	0.004
Grand Mean	0.005

Seedling root biomass is very important in relation to the absorption of nutrients and minerals in the soil. Generally, seedlings with good root biomass consistently survived better than those with poor root biomass.

As to Average Root Biomass, T_2 and T_3 obtained the highest mean of 0.006 followed by T_4, T_3 and T_1 with a min of 0.004 respectively to be the lowest.

Table 11 Ovendry Shoot Biomass (grams)

Treatment	Shoot Biomass
	Treatment Mean
T_0	0.008
T_1	0.010
T_2	0.018
T_3	0.010
T_4	0.014
Grand Mean	0.012

Average Shoot Biomass of the plant shown on table 14, whereT_2 obtained the heaviest with a mean of 0.018g followed by T_4, T_3 and T_1 with a mean of 0.014 and 0.010 for T_3 and T_1; while T_0 obtained the lightest with a mean of 0.008 grams at total ovendry biomass.

Basing from analysis of variance there where no significant differences among the treatments on the weight of oven dried shoots biomass of the plant at appendix table 11.

Table 12 Total Ovendry Biomass

Treatment	Total Ovendry Biomass
	Treatment Mean
T_0	0.011b
T_1	0.016ab
T_2	0.024a
T_3	0.015ab
T_4	0.018ab
Grand Mean	16.87

The result of the study showed that

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treatment treated with magnets with an orientation of east west gave the heaviest weight of 0.024 grams followed by T_4 with a mean of 0.018, T_1 with a mean of 0.016 and T_3 with a mean of 0.015grams while T_0 as the control plant gave the lowest weight of 0.011grams.

The weight of total oven dry biomass as to the findings of analysis of variance gave highly significant result. This means that the higher the biomass is the higher its nutrient absorbed in the soil, hence consistently survived better than with a low biomass. .

DMRT shows that T_2 is no significantly different from T_3 and T_1 but significantly different over T_0 while T_4 is not significantly different from T_2

Table 13 Root – Shoot Ratio

Treatment	Root – shoot Ratio Treatment Mean Root – shoot Ratio
T_0	0.89
T_1	0.89
T_2	0.84
T_3	0.84
T_4	0.85
Grand Mean	0.86

A satisfactory balance between the shoot and root should maintain and this manifested through the value of root –shoot ratio. This is because roots are dependent on shoot for carbohydrates, growth regulator and organic substances such as thiamin and niacin while the shoot are dependent on roots for water, minerals and growth regulators. Successful growth of plants, therefore, depends on maintenance of balance in growth and function between roots and shoots. The analysis of variance revealed that there was no significant result as influenced by the different orientation of magnets. Were T_0 and T_1 obtained the same mean of 0.89grams followed by T_3 that gained a weight of 0.85grams and T_2 and T_3 obtained the same mean of 0.84grams.

T_0 and T_1 got the same mean although plant with high shoot – root ration implies that the rate of absorption of water and essential nutrient present in the soil is high due to high shoot root ration but statistically not significant result revealed from the analysis of variance at appendix table 13. It's because only the shoot has a significant increase in the absorption of nutrient but not significant to root biomass result found out base from its analysis of variance at appendix table 7.

Table 14 Cost and Return Analysis

Inputs							
a. Materials	**Quantity**	**Unit Price**	**T_0**	**T_1**	**T_2**	**T_3**	**T_4**
Polyethylene Bag (12x24	15pcs.	5.00	15.00	15.00	15.00	15.00	15.00
Polyethylene Bag (2x4)	600pcs	120	24.00	24.00	24.00	24.00	24.00
Seeds	1 Sachets	60.00	12.00	12.00	12.00	12.00	12.00
Insecticide (Cymbush)	1 bottle	100	20.00	20.00	20.00	20.00	20.00
Bar magnets	**School Property**						
Subtotal			**71.00**	**71.00**	**71.00**	**71.00**	**71.00**
Miscellaneous			**150.00**				
Activities							
Potting (12x24 Polyethylene bag 15pcs.)			15.00	15.00	15.00	15.00	15.00
(2x4 Polyethylene bag 600pcs.)			60.00	60.00	60.00	60.00	60.00
Subtotal			**75.00**	**75.00**	**75.00**	**75.00**	**75.00**
Outputs							
Eggplant Seedlings (P3.00/pcs)			**117**	**118**	**120**	**116**	**118**

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Gross sale	Total Yield	Gross Sale	Total Cost	Net Income	ROI
T_0	117	351	296	55	18.58
T_1	118	354	296	58	19.59
T_2	120	360	296	64	21.62
T_3	116	348	296	52	17.57
T_4	118	354	296	58	19.59

The table revealed that cost and return analysis of different orientation of magnets. Where T_2 with an orientation of east west gave the highest net income of 64 with a return of investment of 21.62% while T_4 and T_3 got the same net income of 58 and a percentage of 19.59% followed by T_0 and T_3 with a net income of 55 and 52, and 18.58% and 17.57% return of investment respectively.

4. SUMMARY, CONCLUSION AND RECOMMENDATION

Summary:

The study was conducted to determine the effect of magnetism on the germination and growth of eggplant seedlings. Specifically it aimed to determine the effect which of the four (4) magnetic treatments orientation if it enhances the germination and growth of eggplant seedlings. And to find out the effect of four (4) magnetic treatments if there are significant result on plant height, leaf length and diameter, root shoot length, shoot and root biomass, total biomass and root- shoot ratio.

The study was laid out in RCBD (Randomized Complete Block Design) There were 3 Block and divided into 5 treatments used in the study as follows: T_0 – Control, T_1 – North / South, T_2 – East / West, T_3 – Northwest / Southeast, T_4 – Northeast / Southwest.

Result revealed highly significant difference on the treatment at 6 days after sowing (DAS) of germination where T_2 obtained the highest mean of 13.66 followed by T_3, T_4 and T_1 with a mean of 11.66, 10 and 7.66 respectively. T_0 obtained the lowest with a mean of 7, also significant result at 7 days of sowing where T_2 with a mean of 36 as the highest followed by T_3 and T_1 with a mean of 32 and 31.67 for T_4 and 30.67 for T_0 and not significant results on 8 to 10 days after sowing (DAS). Plant height at 25 days after sowing (DAS) whereT_2 obtained the tallest with a mean of 11.85 cm followed by T_1, T_3 and T_4 with a mean of 10.44, 10.35 and 10.25 respectively while T_0 got the smallest with a mean of 9.85cm but no significant differences among the treatment mean basing from the analysis of variance also to 11 DAS and 18 DAS. As to the 1st true leaf length where T_2 obtained the highest mean of 7.24 cm, followed by T_3, T_4 and T_1 With a mean of 6.77, 6.61 and 6.58 respectively. T_0 is the lowest with a mean of 6.09 cm among the treatments. Also to the 1st true leaf diameter at 11 days after sowing significant result revealed basing from the analysis of variance T_2 where the highest with an average of 0.95 followed by T_3, T_4 and T_1 with a mean of 0.90, 0.87 and 0.86cm respectively. T_0 got the lowest with a mean of 0.77, while not significant at 18 to 25 days after sowing. As to the 2nd true leaf length where T_2 obtained 7.29 cm as the highest mean followed by T_3, T_4 and T_1 with a mean of 6.14, 6.09 and 5.85 respectively T_0 obtained the lowest mean 5.05 cm and to 2nd true leaf diameter of the plant at 25 days after sowing significant result also found out base from the analysis of variance where T_2 obtained the highest with a mean of 4.10cm, followed by T_4, T_3 and T_1 with a mean of 3.73, 3.41 and 3.29 respectively while T_0 where the lowest with a mean of 2.92.Also to shoot length significant result revealed from the analysis of variance T_2 obtained the longest with an average mean of 6.54 cm, followed by T_4, T_3 and T_1 with a mean of 5.95, 5.73 and 5.68 respectively, T_0 was the smallest with a mean of 5.01cm. but not significant to shoot biomass and significant as to the shoot weight of the plant where T_2 obtained the heaviest with a mean of 0.215 followed by T_4, T_3 and T_1 with a mean of 0.167, 0.069 and 0.065 respectively while T_0 is the lightest with a mean of 0.053. While not significant result revealed at root biomass T_2 and T_3 obtained the highest with a mean of 0.006 followed by T_4, T_3 and T_1 with a min of 0.004 respectively. but not significant to root length and root weight, While highly significant result found out base from the analysis of variance at total oven dry biomass where T_2 obtained the heaviest weight with a mean of 0.024grams followed by T_4, T_1 and T_3 with a mean of 0.018, 0.016 and 0.015 respectively while T_0 obtained the lowest with a mean of 0.011grams. As root-shoot ratio no significant result basing from the analysis of variance where T_0 and T_1 obtained the same average mean of 0.89 followed by T_4 with a mean of 0.85 and T_3 and T_2 obtained the same mean as the lowest.

Conclusion:

Base on the result of the study, magnetic treatments where significantly increases on the leaf area, plant height and to shoot length and weight also to root biomass and to total ovendry biomass were T_2 with a magnetic orientation of east west probed to be significantly enhances the growth performance of eggplant seedlings followed by T_3 with a Northwest / Southeast orientation of magnets and T_4 Northeast / Southwest last but the least were T_1 North / South orientation of magnets but not to the controlled plants.

Recommendation:

The following recommendations were endorsed:

1. Similar studies should conducted using other crops to find out the best result.
2. Similar studies should be conducted but up to the fruiting stage to see if there are effects on the size of the fruits.

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