BIBLIOGRAPHY

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Adviser: Percival B. Alipit, Ph.D.

ABSTRACT

This study was conducted at Horticulture Experiment Field, Benguet State University, La Trinidad, Benguet from January to February 2012 to evaluate the growth and yield of spinach applied with different organic fertilizers, determine the best organic fertilizer materials for spinach, and determine the profitability of spinach production as affected by different organic fertilizers.

Results revealthat there were no significant differences on the number of days from sowing to seedling emergence and to harvest. However, application of chicken dung plus 14-14-14 or alnus leaves compost plus chicken manure significantly increased plant height and marketable yield from which higher return on investment at 190.36% and 157.71 %, respectively were derived.

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INTRODUCTION

There are lots of vegetables being produced in the province of Benguet. Most are grown commercially and are being sold in local and national markets. For example cabbage, carrots, lettuce, broccoli, cauliflower, and potato are the major crops favorable grown by farmers in the province. However, there are other vegetable crops that can be produced under Benguet condition as such spinach, which it is very popular in other countries and valuable due to its medicinal and nutritive values.

Spinach (*Spinaciaoleracea*) belongs to the chenopodiaceae family which includes the beet and chard. Spinach was first introduced in Europe in the thirteenth or fourteenth century, coming from Asia, where it originated, by way of Africa (Ware, 1980).

Spinach is native to central Asia, most likely in the area of Iran. The absences of records suggest that its domestication was fairly recent. Although it is widely distributed, spinach is not an intensively grown crop. From 1996 to 1998, annual U.S. spinach production averaged approximately 527 million pounds. From1996 to 1998, annual U.S. processing spinach production averaged approximately 254 million pounds (MacMahon*et al.*, 2002).

According to Sukil-ap (2011) application of organic fertilizer contributes much in the growth and development of the crop as well as in its eating quality. Organic matter has been found to improve the physical and chemical properties of the soil. Processed chicken manure, Sagana 100 and other organic fertilizers applied in minimal amount compared to animal manure can provide nutrition to the crop similar to that of the inorganic fertilizers.

Spinach is not yet popular in the locality as vegetable crop but it has economic potentials. Providing proper nutrition to the crop insures better yield and quality and higher income of the farmers. Thus, this study aimed to evaluate the growth and yield of spinach applied with different organic fertilizers, determine the best organic fertilizer materials for spinach production, and determine the profitability of spinach production with the application of various organic fertilizers.

The study was conducted at the Horticulture Experiment Field, Benguet State University, La Trinidad,Benguet from January to February 2012.

REVIEW OF LITERATURE

The Crop

Bonar (1994) stated that spinach of some kind was listed as a garden plant long ago in the 15th century in Britain, when it was used in sweet dishes. In spite of this, it was known as the 'Spanish vegetable' because it was thought to originate in Spain and was introduced by the Moors. In fact, Asia is its native habitat, and it was eaten by Greeks and Romans, not just used for medical purposes.

Like lettuce, spinach grows quickly, but unlike most lettuce varieties, it is cut-and-come-again crop. In other words, you pull a small amount from each plant at each picking and then allow more leaves or shoots to develop (Buczacki, 1988).

Nutritional Value

From the health point of view spinach contains a good deal of vitamin A and B, a useful quantity of vitamin C, together with potassium, iron and calcium, but most of these are lost if the leaves are boiled. They are better steamed, but even so the water used for steaming becomes discolored suggesting that some goodness is still being lost. The oxalic acid in spinach makes its calcium unavailable when boiled in water. To retain its nutrients, it is best simmered in milk as a soup. With a low calorie value and high dietary fiber, spinach has a great deal to commend it as a vegetable: easily grown, and prolific crop, it has considerable dietetic use (Bonar, 1994).

Climatic Requirements

Spinach is essentially hardy, cool season crop. When fairly well hardened, it can survive temperatures of 2^0F or lower without suffering injury. High temperatures and especially long days cause spinach to bolt and produce seeds, thus destroying its market value. In general, it is a short-season crop, maturing from 6 to 10 weeks, depending on the prevailing climatic conditions (Ware, 1980).

Soil Preference of Spinach

Spinach grows well on a wide range of soils, but it yields best on a heavy loam. In southwest Texas, much of the spinach is grown on well-drained alluvial soils, silt and clay loams also are used fairly widely. In Virginia, there are acreages of spinach on sandy and gravelly loams. Sandy soils are desired for winter and early spring crops. Muck soils are used in north for their main crop and processing spinach. A good soil should have good drainage and if possible be well supplied with organic matter (Ware, 1980).

Organic Fertilizer

The use of manures and fertilizers is briefly, to supply nutrients to the soil to enable plants to make the maximum growth or produce the best crops, restore the fertility of an exhausted soil and enrich a naturally poor soil. They may be contribute directly by supplying plant-food, or indirectly by (a) reacting chemically or bacteriologically on substances already present in the soil but not in a form capable of being absorbed by plants; (b) by improving the mechanical condition of the soil, thus rendering more penetrable to the roots of growing crops (Macmillan, 1991).

Animal manures are especially valuable in vegetable gardening, for in addition to the plant food they contain they supply a large amount of organic matter to the soil, which, as indicated above, assists in the liberation of plant food already present in the soil. Their composition depends chiefly upon kind of manure (whether produced by horses, cattle, sheep, swine or poultry), the amount litter contains, and the condition under which it has been kept. Animal manures, whether composed or not, form a better balanced fertilizer for many vegetables than they do for general farm crops, especially the cereal grains. This is because of their relatively high content of nitrogen and potassium as compared with phosphorus. Vegetables, especially those of which a vegetative part (root, stem or leaf) constitutes the edible product, demand nitrogen in large quantities and are less exacting in their demands for phosphorus (Lloyd, 1935).

The use of organic fertilizer and organic fertilizer-based fungicides/insecticides result to good growth, yield, safe and tasty vegetables. Organic fertilizer makes soil good and rich in nutrient elements. Fields with enriched soil let vegetables grow fast, healthy and strong. Growth continuous until time of harvest because the soil continuous to provide nutrients. Plants have fewer pest and diseases and vegetables can be harvested in shorter days. Products are larger and look better and they contain vitamins and minerals in larger percentage. The use of organic- based materials will let us save at least half of chemicals and fertilizers compared with traditional farming practices (Yokomori, 2007).

McConnel (2003) state that organic fertilizers are derived from either plant or animal materials. Not all the nutrients contained in such materials are in organic form and those that are in organic form are not or completely available to plants. Complex organic compounds will become part of the soil organic cycle and could perhaps have an eventual nutrient value, depending on the activity of the soil biomass.

Compared with inorganic sources of nutrients, organic sources have the following features:

- They are not immediately soluble in water and so not readily leached

- Because they have to breakdown to become partially soluble, they can act as slow-release source of plant nutrient.
- They can be applied at heavy rates without risk of injury to roots or germinating seeds as they have little ionic activity.
- They can stimulate microbial activity.
- They are much more costly per unit of plant food (unless by-products).
- The recovery of nutrients contained in the materials is low.

Organic fertilizers have restricted use in cropping systems that use mineral fertilizer, but they do have a place in organic production systems, particularly market gardening and horticulture where the slow-release characteristics have application for some high-value crops that are grown.

According to Sangatan (2000) as cited by Kudan (2010) organic fertilizer/organic manure are generally the most valuable soil conditioner. The materials from organic fertilizer generally have low content of nitrogen, phosphorus, and potassium but they also supply other essential micronutrients. As soil conditioners, organic fertilizer helps prevent soil erosion, crashing and cracking of soil. They retain soil humidity and improve the internal drainage of the soil.

Nitrogen and other elements contained in organic fertilizer are released slowly. Thus, their continuous application helps build up the soil, particularly when this is done for over a long period of time.

Organic fertilizer such as compost, animal manure,azolla,ipil-ipil, industrial wastes, and oil seed meals can be used in place of chemical fertilizer. Organic fertilizer should serve as supplement to inorganic fertilizer. It improves the physical make-up of the soil and enriches the organic matter (Kudan, 2010).

According to Sangatan (2000) as cited by Kudan (2010) the color of the soil changes from light to dark. It promotes good physical condition of the soil. The organic fertilizer makes the soil friable and loose, resulting in the better soil aeration and drainage, and making it easier for the roots to grow. In sandy soils, the organic matter may be help bind together the sand particles and increase its water holding capacity. The physical condition of organic matter itself is also ideal for mixing it with chemical fertilizer before application. The cation exchange capacity of the soil is increased and its nutrient availability is enhanced with the application of organic acids in humus that aids in extracting plant nutrients from mineral soil. Organic materials supply energy and building constituents for the multiplication of beneficial soil micro-organisms.

MATERIALS AND METHODS

Materials

The materials thatwere used in the study were seeds of spinach F_1 hybrid 'Esmeralda',alnus leaves compost, cocodust compost, chicken manure, BSU compost (2.0%N,2.7%P_2O_5,2.4%K_2O),Siglat(2.17%N,3.19%P_2O_5,2.27%K_2O),Fedmuco(3.5%N,2.19%P,1.44%K), measuring devices, labeling materials, recording and documenting materials, and farm tools.

Methods

The experiment was conducted in an open field utilizing an area of 105$m^2$with 1x5m plots. There were seven (7) fertilizer treatments with three replications. The experiment was done following the randomized complete block design (RCBD).

Treatments were as follows:

F_0- 1:1Chicken manure and 14-14-14 (Farmer's application practice)

F_1-1:1Alnus leaves compost and chicken manure

F_2-1:1BSU compost and Fedmuco

F_3- 1:1Siglat andcocodust compost

F_4- 1:1 Cocodust compost and alnus leaves compost

F_5- 1:1 Fedmuco and Siglat

F_6-1:1 Siglat and alnus leaves compost

The organic fertilizer mixtures described in the treatments wereapplied at 13 grams per hill and mixed thoroughly with the soil. Seeds were soon in holes, three seeds per hill spaced 15x15 cm apart.

The recommended crop maintenance in irrigation, crop protection, and other cultural practices in spinach production were employed.

The data gathered were as follows:

1. Number of days from sowing to seedling emergence. This was taken bycounting number of days from sowing until the seedlings emerged from the soil.

2. Days from sowing to harvest. This was taken by counting the number of days from sowing up to harvest time when the plants had reached full vegetative growth.

3. Plant height (cm). Five (5) samples were measured per treatment plot from the base to the tip of the leaf during harvest.

4. Average plant weight (g). Ten (10) randomly uprooted plants were weighed andthe weight was divided by ten.

5. Total yield (kg/ 5m^2 plot). This was the weight of spinach plants harvested.

6. Marketable yield (kg). This was the weight of plants without defects.

7. Non-marketable yield (kg). This was the weight of rotten, malformed, and smallsize plants.

8. Occurrence ofpestsand diseases. Insect pestsand diseases that attacked the plants were identified and observed during the cropping period.

9. Soil Analysis. The pH, N, P, and K of the soil were determined before application of organic fertilizer materials.

10. Cost and return analysis. The return on investment was computed using the formula:

ROI (%) = Net Income / total expenses x 100

11. Documentation. This was taken through photographs of the treatment plants.

RESULTS AND DISCUSSION

Number of Days from Sowing to Seedling Emergence

Table 1 shows that there were no significant differences in the number of days from sowing to seedling emergence as affected by the fertilizers applied.

Plant Height

Plants were significantly taller with the application of either chicken manure plus 14-14-14 or alnus leavescompost plus chicken manure (Table2).

Table 1. Number of days from sowing to seedling emergence

TREATMENT	MEAN
Chicken manure and 14-14-14	7.00[a]
Alnus leaves compost and chicken manure	7.00[a]
BSU compost andFedmuco	7.00[a]
Siglat and cocodust	7.33[a]
Cocodust compost andalnus leaves compost	7.67[a]
Fedmuco andSiglat	7.33[a]
Siglat andalnusleavescompost	6.00[a]

Means with the same letter are not significantly different at 5% levels by DMRT

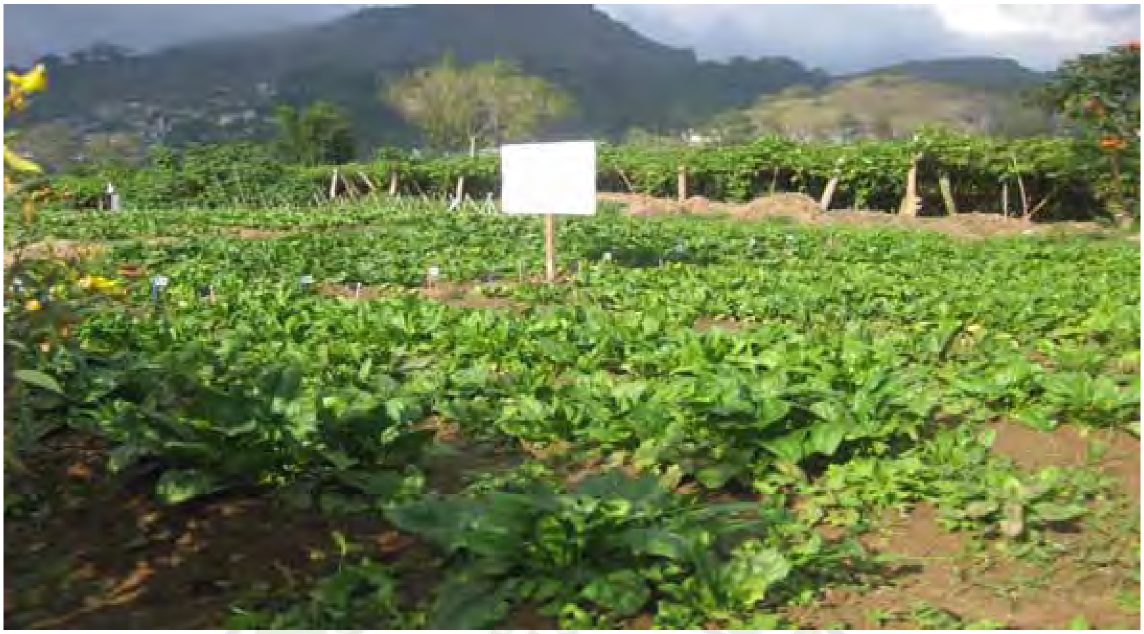

Figure 1.Overview of the experiment field

Figure 2. Harvesting of plantsFigure 3. Sample harvestedspinach plants

Chicken manure and 14-14-14

Alnus leaves compostand chicken manure

BSU compost and Fedmuco

Siglat and cocodust compost

Cocodust compost and alnus leaves compost

Fedmuco and Siglat

Siglat and alnus leaves compost

Figure 4.Sample treatment plants

Table 2. Plant height

TREATMENT	MEAN (cm)
Chicken manure and 14-14-14	34.53[a]
Alnus leaves compost and chicken manure	32.13[ab]
BSU compost andFedmuco	27.73[bc]
Siglat andcocodust compost	23.73[c]
Cocodust compost andalnus leaves compost	22.70[c]
Fedmuco andSiglat	25.67[c]
Siglat andalnus leaves compost	28.63[bc]

Means with the same letter are not significantly different at 5% levels by DMRT

Days from Sowing to Harvest

All treatment plants reached full vegetative growth and were harvested 40 days from sowing.

Average Plant Weight

As presented in table 3, there were no significant effects of the fertilizer treatments onplant weight.

Total Yield

Table 4reveals that significantly higher total yield was obtainedfrom plants applied with chicken manure plus 14-14-14 or alnus leaves compost plus chicken manure.

Table 3. Average plant weight

TREATMENT	MEAN (g)
Chicken manure and 14-14-14	106.33[a]
Alnus leaves compost and chicken manure	74.33[a]
BSU compost andFedmuco	51.33[a]
Siglat andcocodust compost	57.33[a]
Cocodustcompost andalnus leaves compost	101.67[a]
Fedmuco andSiglat	51.00[a]
Siglat andalnus leaves compost	37.00[a]

Means with the same letter are not significantly different at 5% levels by DMRT

Marketable Yield

Table 5 shows that the marketable yield of plants applied with chicken manure plus 14-14-14was comparable to the yield obtained with the application ofalnus leaves compost plus chicken manure but was significantly higher than the yield obtained from the other treatment plants.

Non-Marketable Yield

There were no significant differences in non-marketable yield as affected by the different fertilizers applied (Table 6).

Table 4. Total yield

TREATMENT	MEAN (kg/5m^2 plot)
Chickenmanure and 14-14-14	3.29^{a}
Alnus leaves compost and chicken manure	2.68^{ab}
BSU compost andFedmuco	1.98^{bc}
Siglat andcocodust compost	1.58^{c}
Cocodust compost andalnus leaves compost	1.17^{c}
Fedmuco andSiglat	1.83^{bc}
Siglat andalnus leaves compost	1.65^{c}

Means with the same letter are not significantly different at 5% levels by DMRT

Table 5.Marketable yield

TREATMENT	MEAN (kg/5m^2 plot)
Chicken manure and 14-14-14	3.11^{a}
Alnus leaves compostand chicken manure	2.15^{ab}
BSU compost andFedmuco	1.89^{b}
Siglat andcocodust compost	1.48^{b}
Cocodust compost andalnus leaves compost	1.36^{b}
Fedmuco andSiglat	1.72^{b}
Siglat andalnus leaves compost	1.96^{b}

Means with the same letter are not significantly different at 5% levels by DMRT

Table 6.Non-marketable yield

TREATMENT	MEAN (kg/5m^2 plot)
Chicken manure and 14-14-14	0.18[a]
Alnus leaves compost and chicken manure	0.20[a]
BSU compost andFedmuco	0.10[a]
Siglat andcocodust compost	0.11[a]
Cocodust compost andalnus leaves compost	0.14[a]
Fedmuco andSiglat	0.11[a]
Siglat andalnus leaves compost	0.07[a]

Means with the same letter are not significantly different at 5% levels by DMRT

Occurrence of Insect Pests and Diseases

During the cropping period, ants were observed attacking the seeds sown while flea beetles and cutworms were found infesting the plants. There were no diseases found infecting the crop.

Soil Analysis

The soil prior to the application of fertilizers had a pH of 6.59, 0.05% nitrogen, 50 ppm phosphorus, and 400 ppm potassium.

Cost and Return Analysis

Table 7 shows that the highest return on investment was obtained with the application of chicken manure plus 14-14-14 followed by the application of alnus leaves compost and chicken manure.

Table 7. Cost and return analysis

ITEM	TREATMENT						
	F_0	F_1	F_2	F_3	F_4	F_5	F_6
Yield(kg/1x5m plot)	9.34	6.46	5.66	4.43	4.08	5.16	5.87
Sales	560.4	387.6	339.6	265.8	244.8	309.6	352.2
Farm Inputs:							
Seeds	64	64	64	64	64	64	64
Chicken manure	54	54	-	-	-	-	-
14-14-14	75	-	-	-	-	-	-
Fedmuco	-	-	90	-	-	90	-
Cocodust compost	-	-	-	41.4	41.4	-	-
Siglat	-	-	-	90	-	90	90
Alnus leaves compost	-	32.4	-	-	-	-	32.4
BSU compost	-	-	82.8	-	-	82.8	-
Expenses (Php)	193	150.4	236.8	195.4	105.4	326.8	186.4
Net Income(Php)	367.4	237.2	102.8	70.4	119.4	17.2	165.8
ROI(%)	190.36	157.71	43.41	36.03	113.28	5.26	88.96
RANK	1	2	5	6	3	7	4

Note: The selling per kilogram was Php. 60.00

F_0- 1:1 Chicken manure and 14-14-14 (Farmer's application practice)

F_1- 1:1 Alnus leaves compost and chicken manure

F_2-1:1 BSU compost and Fedmuco

F_3-1:1 Siglat andcocodust compost

F_4- 1:1 Cocodust compost and alnus leaves compost

F_5- 1:1 Fedmuco and Siglat

F_6-1:1 Siglat and alnus leaves compost

SUMMARY, CONCLUSION, AND RECOMMENDATION

Summary

The study was conducted at HorticultureExperiment Field of the Benguet State University, La Trinidad, Benguet from January to February 2012 to evaluate the growth and yield of spinach applied with different organic fertilizers, determine the best organic fertilizer materials for spinach production, and determine the profitability of spinach production with the applicationof different organic fertilizers.

Basedon the results,the number of days from sowing to seedling emergence and to harvest were not significantly affected by the fertilizersapplied. However, plant height, total, and marketable yield were significantly higher with the application of either chicken manure plus 14-14-14 or alnus leaves compost plus chicken manure from which higher return of investment was obtained at 190.36% and 157.71 %, respectively.

Conclusion

Higher yield and profit were obtained with the application of chicken manure and 14-14-14 or alnus leaves compost and chicken manure.

Recommendation

It is therefore recommended that spinach be applied with a combination of chicken manure and 14-14-14 to be more productive, and for organic farming, with the application of alnus leaves compost and chicken manure.

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APPENDICES

Appendix Table 1. Number of days from sowing to seedling emergence

TREATMENT	REPLICATION I	II	III	TOTAL	MEAN
Chickenmanure and 14-14-14	9.00	6.00	6.00	21.00	7.00
Alnus leaves compostand chicken manure	7.00	7.00	7.00	21.00	7.00
BSU compost andFedmuco	7.00	7.00	7.00	21.00	7.00
Siglat andcocodust compost	8.00	8.00	6.00	22.00	7.33
Cocodust compost andalnus leaves compost	9.00	7.00	7.00	23.00	7.67
Fedmucoand Siglat	8.00	8.00	6.00	22.00	7.33
Siglat plus alnus leaves compost	6.00	6.00	6.00	18.00	6.00

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARES	COMPUTED F	TABULAR F 5%	1%
Replication	2	5.809	2.904			
Treatment	6	4.952	0.825	1.209^{ns}	2.996	4.821
Error	12	8.190	0.682			

Total	20	18.952

Ns- not significant Coefficient of variation=11.72%

Appendix Table 2.Plant height (cm)

TREATMENT	REPLICATION			TOTAL	MEAN
	I	II	III		
Chickenmanure and14-14-14	34.60	33.30	35.70	103.60	34.53
Alnus leaves compost and chicken manure	33.40	32.70	30.30	96.40	32.13
BSU compost andFedmuco	31.00	27.80	24.40	83.20	27.73
Siglat andcocodust compost	23.70	27.80	19.70	71.20	23.73
Cocodust compost andalnus leaves compost	25.60	24.00	18.50	68.10	22.70
Fedmuco and Siglat	27.30	25.40	24.30	77.00	25.67
Siglat plus alnus leaves compost	27.80	24.60	33.50	85.90	28.63

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARES	COMPUTED F	TABULAR F	
					5%	1%
Replication	2	20.690	10.345			
Treatment	6	335.618	55.936	5.833**	2.996	4.821
Error	12	115.0705	9.589			
Total	20	471.378				

**- highly significant Coefficient of variation=11.11%

Appendix Table 3. Average plant weight (g)

TREATMENT	REPLICATION			TOTAL	MEAN
	I	II	III		
Chickenmanure and 14-14-14	129.00	70.00	120.00	319.00	106.33
Alnus leaves compost and chicken manure	103.00	29.00	91.00	91.00	74.33
BSU compost andFedmuco	61.00	44.00	49.00	49.00	51.33
Siglat andcocodust compost	62.00	90.00	20.00	20.00	57.33
Cocodust compost andalnus leaves compost	71.00	24.00	210.00	210.00	101.67
Fedmuco and Siglat	65.00	53.00	35.00	35.00	51.00
Siglat plus alnus leaves compost	25.00	15.00	71.00	71.00	37.00

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARES	COMPUTED F	TABULAR F	
					5%	1%
Replication	2	5539.143	2769.571			
Treatment	6	12849.81	2141.635	1.106779ns	2.996	4.821
Error	12	23220.19	1935.016			
Total	20	41609.14				

Ns-not significant	Coefficient of variation=64.28%

Appendix Table 4. Total yield (kg/ 1x5mplot)

TREATMENT	REPLICATION			TOTAL	MEAN
	I	II	III		
Chickenmanure and 14-14-14	2.47	4.15	3.25	9.87	3.29
Alnus leaves compost and chicken manure	2.23	2.99	2.83	8.05	2.68
BSU compost andFedmuco	2.22	1.93	1.80	5.95	1.98
Siglat andcocodust compost	1.46	2.03	1.26	4.75	1.58
Cocodust compost andalnus leaves compost	1.20	1.15	1.15	3.50	1.17
Fedmuco and Siglat	2.15	1.69	1.69	5.49	1.83
Siglat plus alnus leaves compost	1.60	2.31	2.31	4.96	1.65

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARES	COMPUTED F	TABULAR F 5%	TABULAR F 1%
Replication	2	0.190	0.095			
Treatment	6	9.430	1.572	6.479**	2.996	4.821
Error	12	2.911	0.243			

Total	20	12.530

**-highly significant Coefficient of variation=24.30%

Appendix Table 5.Marketable yield (kg/ 1x5m plot)

TREATMENT	REPLICATION			TOTAL	MEAN
	I	II	III		
Chicken manure and 14-14-14	2.29	4.05	3.00	9.34	3.11
Alnus leaves compost and chicken manure	1.13	2.79	2.54	6.46	2.15
BSU compost andFedmuco	2.13	1.84	1.69	5.66	1.89
Siglat andcocodust compost	1.36	1.94	1.13	4.43	1.48
Cocodust compost andalnus leaves compost	2.01	1.04	1.03	4.08	1.36
Fedmuco and Siglat	1.95	1.58	1.63	5.16	1.72
Siglat plus alnus leaves compost	1.50	2.11	2.26	4.74	1.96

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARES	COMPUTED F	TABULAR F 5%	TABULAR F 1%
Replication	2	0.666	0.333			
Treatment	6	6.071	1.012	3.043*	2.996	4.821
Error	12	3.991	0.332			

Total	20	10.728

*- significant Coefficient of variation=29.54%

Appendix Table 6.Non-marketable yield (kg/1x5m plot)

TREATMENT	REPLICATION			TOTAL	MEAN
	I	II	III		
Chicken manure and 14-14-14	0.18	0.10	0.25	0.53	0.18
Alnus leaves compost and chicken manure	0.10	0.20	0.29	0.59	0.20
BSU compost andFedmuco	0.09	0.09	0.11	0.29	0.10
Siglat andcocodust compost	0.10	0.09	0.13	0.32	0.11
Cocodust compost andalnus leaves compost	0.19	0.11	0.12	0.42	0.14
Fedmuco and Siglat	0.20	0.07	0.06	0.33	0.11
Siglat andalnus leaves compost	0.10	0.07	0.05	0.22	0.07

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN OF SQUARES	COMPUTED F	TABULAR F	
					5%	1%
Replication	2	0.006	0.003			
Treatment	6	0.036	0.006	1.737^{ns}	2.996	4.821

Error	12	0.041	0.003
Total	20	0.084	

Ns- not significant   Coefficient of variation=45.66%