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ABSTRACT

The study was conducted to: determine the growth and yield of peanut entries applied with different organic fertilizers; determine the best organic fertilizer that will produce significant yield on the peanut entries; and determine the interaction effect of peanut entry and organic fertilizer on the different parameters.

Bisaw and *Putaw* significantly produced the highest number of seeds per pod. *Bisaw* produced the highest marketable and total yield though no significant differences were observed among the peanut entries. Plants applied with BSU- organic fertilizers produced the highest marketable and total yield but not significantly different with the plants applied with the other organic fertilizers and the control.

The best combination based on yield was *Bisaw* entry and application of BSU- organic fertilizer.

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INTRODUCTION

Peanut (*Arachis hypogaea L.*) or groundnut locally known as “mani” is one of the most important legumes in the Philippines. It is a year round crop of Filipinos as finger food, prepared in many ways. It is the most common, available and largest selling snack in the country, aside from a major source for food, it is used as shortening, confectionery, and various industrial products. It is a marketed as fresh vegetable, canned, frozen, roasted in the shell, toasted and salted. In the manufacture of butter margarines, and other products, peanut is highly in demand (BAR, 1995).

In terms of nutritional content, peanut is an important source of protein, calories and minerals. It has approximately 25 to 30% protein (dry weight) and 46 to 50% oil. It has a rich source of thiamine and hyacinth provided it is not overheated during roasting. It is limiting in amino acids, methiomine, cystine, and lysine (PCARRD, 2002).

It is said that in many instances, the mere use of an improve variety has resulted in tremendous increase in yields. In areas where peanut is widely grown, the choice of variety is usually not considered. Most are planting the native variety, thus, yield is low. Knowing the right variety to plant is very important if a bigger produce of good quality peanut is desired. Thus, variety evaluation is done to find out the varieties that are adapted to the locality, high yielding, resistant to pests and diseases, and which command a higher price (PCARRD, 2002).

Peanut quality is such an important factor that influences consumers’ and processors’ acceptability. Traditionally, quality has been related to yield, pod characteristics, appearance and safeness from hazardous farm chemicals, good eating quality, processing quality and most of all its nutritional value (Villanueva, 2005).

Nowadays, problems on soil fertility and occurrence of plant diseases lead to low production as experienced by most farmers. Thus, application of pure inorganic fertilizer is often practiced to attain maximum yield of legume crops. However, the continuous application of inorganic fertilizer will destroy the soil structure and pollute the water source. The application or addition of organic fertilizer may, therefore, be a good alternative since it will not only reduce inputs of farmers but also improve soil tilth, soil structure, aeration, and water holding capacity (Follet, 1981).

Researchers have found that organic fertilizers like azolla, mushroom compost, BSU-Organic fertilizer and alnus compost are good source of soil nutrient. These fertilizers generally provide essential elements for proper plant growth and some improve the physical, chemical, and biological conditions of soil as claimed by some researchers. Compost fertilizers are economical to use by the farmers than inorganic fertilizers (Marquez, 1988).

In the locality, there is scarce information on the response of peanut varieties to organic fertilizers, thus, this study.

The study was conducted to:

1. determine the growth and yield of peanut entries applied with different organic fertilizers;

2. determine the best organic fertilizer that will produce significant yield on the peanut entries; and

3. determine the interaction effect of peanut entry and organic fertilizer on the different parameters.

The study was conducted at Beleng-belis, Kapangan, Benguet from November 2010 to March 2011.

REVIEW OF LITERATURE

Effect of Organic Fertilizer on Growth and Yield of Crops

Organic matter and their decomposition products can favorably affect the growth and metabolism of plants and have been reported to control the proliferation of parasitic nematodes and reduce the toxic effects of pesticides. his effects of organic matter to the function of bio-regulators which are produced un the process of decomposition of organic matter or soil humic matter (Cooke, 1984).

The BSU-organic fertilizer produced under the porject is a mixture of mushroom compost, chicken dung and sunflower. It contains 32.23% organic matter indicative of high nitrogen content which is one of the most essential nutrients needed by the crop.The use of raw materials such as Trichoderma and some strains of bacteria to called "bio-fertilizers." Trichoderma is known to protect plant roots against disease caused by fungi (Laurean, 2009). Furthermore, the benefits derived from bio-organic fertilizer are: improved soil structure; enhance soil balance and nutrient availability; supply of micronutrients essential for crop growth of microorganisms that helps control growth of soil-borne diseases and nematodes; and makes plant healthier and gives higher crop yield.

According to Tan (1985) compost has identified organisms such as: *Trichoderma* spp. and *Pennicillium* spp. Related studies indicate that these organism have anti fungal and anti bacterial properties. Alnus compost was also used as soil conditioner in replacement of the farmers' practice of applying chgicken dung, to determine its effect against clubroot on cabbage under grweenhouse conditons. Results of the study showed that plants without clubroot applied with alnus compost at the rate of 6 tons per hectare

appear to be the tallest. Severe plant growth inhibition and wilting were observed on plants grown in clubroot-infested soil without alnus and chicken manure. The application of chicken dung at 4 tons per hectare and alnus compost at 6 tons per hectare slightly suppressed the activity of clubroot.

Poincelot (1980) stated that decomposition of organic matter by microorganisms release nutrients, including trace elements needed for crop production. While not enough for complete maintenance, it does help to offset fertilizer needs. The organic matter removed after degradation, stabilized form resistant to microbial attack known as humus.

Local studies showed that sweet potato responds to the application of organic fertilizer as shown by increases in yield of storage roots and improvement of vine vigor. The use of manure and compost is beneficial especially chicken dung applied at one to two tons per hectare have been found to increase root yield (Ladera, 1993).

According to Balaoing and Lagman (2003), the use of vermicompost as fertilizer provides necessary nutrients in growing pechay. Also vermicompost is also a good potting media for onions. Furthermore, Andaya (1999) reported that the pure BSU compost and BSU compost + garden soil (4:1) proved to be the best growing media for cutflowers. The plants produce more number of flowers, have increased stem length, have improved quality of marketable cut flowers and had the biggest bloom of flowers.

Effect of Organic Fertilizers on Growth and Yield of Peanut

Yoshida (1991) reported that the use of organic materials as fertilizers affected the amount of roots throughout the plant growth and increased the percentage of nodal roots

that elongate to the deep soil layers. The effects of root growth were ascribed to the restrained uptake to the nitrogen released from organic materials at early stage.

The use of organic fertilizers is an essential requirement for higher crop yield in most soils, with nitrogen generally being the most important soil nutrient for legume crop production. Though peanut fixes nitrogen through a symbiotic process, application of nitrogen as starter dose at planting is recommended to increase yield in almost reasons (Hoque, 1988).

Yield and Quality of Peanut

Hagan and Foshee (2000) stated that maximum yield and quality depend upon developing and maintaining a strong, healthy plant. Cultural practices such as cultivation, should be done to prevent damage to the cotyledonary branches, where most by the peanuts originate.

The production of high quality peanut seed begins with the selection of both the land and seed. High quality seed is seed that is capable by establishing full stands or vigorous, uniform seedling that will grow into mature, productive plants. “Foundation” or “Registered” seed must be planted to produce certified seed. To reduce disease and volunteer plant problems, a good rotational program is essential under contact to commercial companies that buy, store, shell, and teat the seed (ACIA, 1992).

PCARRD (1992) reported that yields of peanut plants near the hedge grows are shorter and somewhat poor pod yields are also lower than the yields of plants in the middle rows in each alley. Lower yield of plants near the hedgegrows could probably be due to the shading effect and nutrient competition with the alley crop.

Varietal Evaluation

Varietal evaluation is necessary to observe the growth and development of the crop. The importance of having a variety evaluation is to observe the characters such as yield, earliness to vigor maturity and keeping quality because different varieties have wide range of plant differences, size, and yield performance (Work and Carew, 1995). Variety evaluation gatheres data and plant character, tield and pod quality. Hence, high yielding and improved cultivars known to play a role in boasting production are obtained (Regmi, 1990).

Varietal evaluation is done to find out those varieties of crops that are adapted to the grower's need, is very important. But after testing most attention should be paid to test strains and stocks of varieties selected because great differences exist between strains in peanut crops and is only by trial that superior varieties are found (Thompson and Kelly, 1987).

When evaluating and choosing variety, several conditions must be considered. Good yield and good grade over a wide range of conditions are usually the most important. It determines the gross return for the crop. Consistency of yield is important across locations but environmental, disease, rainfall and irrigation factors can effect how a variety responds (Aban, 1992).

Quilloy (1995) stated that planting the right varieties that are suited to the specific locations will result to increasing yield by 20%. Siloy (1991) reported that variety must be adapted to the area in which it is grown. There is a great variation in the yielding of the different varieties when grown in the same method of culture.

Sunil (1990) said that variety evaluation was a process in crop breeding program which provides comparison of promising lines developed by a breeder sees the yield, quality, adaptability, stress tolerance, and insect pest and diseases resistance.

Kisofen (2001) in her study on varietal evaluation of peanut found thatAccessions 88392 and E.G. Red significantly produced the heaviest weight of 100 pods while UPL-Pn-10 recorded the lightest. All varieties were rated mildly resistant to leaf spot disease.

MATERIALS AND METHODS

An area of 300 m^2 was thoroughly prepared. The area was divided into three blocks representing the three replications with 20 plots with a dimension of 1 m x 5 m each. The experiment was laid-out using 4 x 5 factor factorial in Randomized Complete Block Design (RCBD). The five peanut entries served as a Factor A and the application of the three organic fertilizers served as Factor B.

Factor A. Peanut Entries (E)

Entry	Local name	Color of Seed Coat	Source
E_1	*Bisaw*	Red	Beleng-belis, Kapangan
E_2	*Putaw*	White	Poblacion, Kibungan
E_3	*Aknapan*	Red	Poblacion, Kibungan
E_4	*Naguey*	Red	Atok
E_5	*Bakun*	White	Bakun

Factor B. Organic Fertilizer (OF)

OF1 – Control (no organic fertilizer)

OF2 – Alnus compost (5 kg per 5 sq m)

OF3 – BSU-organic fertilizer (5 kg per 5 sq m)

OF4 – Mushroom compost (20 kg per 5 sq m)

Basal application of fully decomposed alnus fertilizer was done one day before planting with a rate of 5 kg per sq m (Parnes, 1986). Mushroom compost was applied one

week before planting with a rate of 20 kg per sq m (Laurean, 2009, BSU organic fertilizer was done just before planting at a rate of 5 kg per 5 sq m (Balaoing, 2010).

Planting was done in double rows with two seeds per hill at a distance of 25 cm between hills and rows and 50 cm apart. All cultural practices needed in the production of peanut were uniformly employed throughout the growing period. Irrigation was done once a week. Weeding was done whenever needed while pest control was done manually by picking the insect pests. There was no chemical spraying with pesticides.

The data gathered were the following:

A. Meteorological data. The average monthly temperature, relative humidity, sunshine duration and rainfall were recorded every weekend during the entire growing season of the crop from November 2010 to March 2011. Rainfall was gathered using a cylindrical half-cut plastic container then transferred to a baker to measure the volume.

B. Plant characters. The data was gathered from ten sample plants randomly selected from each treatment.

1. Days from sowing to emergence. This was recorded by counting the number of days from sowing to emergence of at least 50% of the seed sown had emerged.

2. Days from emergence to flowering. This was recorded starting from emergence with the day when 50% of plants had flowered.

3. Days from flowering to pod setting. This was taken by counting the number of days from flowering to the day when pods are formed.

4. Percent Survival. This was computed using the formula:

$$PS\ (\%) = \frac{\text{Total Number of Plants Survived}}{\text{Total Number of Seeds Sown}} \times 100$$

5. Plant vigor. Visual rating was done 30 days after planting using the scale:

Scale	Description	Remarks
1	Plants are weak with few stem are very pale	Poor
2	Plants are weak with few thin stems and leaves pale	Less vigorous
3	Better than less vigorous	Vigorous
4	Plants are moderately strong with robust stem and leaves were light	Moderately like
5	Plants are strong with robust stem and leaves	Highly vigorous

7. Plant height. This was determined by measuring vertically from the ground level to the tip of the main stem taken at maturity. Initial and final height of plants were recorded.

8. Number of seeds per pod. This was recorded by counting number of seeds per pod from ten sample pods per entry.

C. Yield and Yield Parameters

1. Number and weight of marketable pods per plot (kg/5m^2). This was gathered by counting and weighing the marketable seeds per plot per entry.

2. Number and weight of non-marketable pods per plot (kg/5m^2). This was gathered by counting and weighing the number of damaged, small sized and infested seeds.

3. Total plot yield (kg/plot) and computed yield per hectare (t/ha). The yield per plot was determined by weighing all harvested pods then converted to tons per hectare using the following formula;

Yield (t/ha) = Yield/ plot x 2

D. Reaction to Pest and Diseases

Pest and Disease incidence. This was noted by visual observation and was assessed by rating the degree of pest and disease incidence on the crop at 60 days after sowing.

1. Leaf miner incidence (Villanueva, 2005).

Rating	Percent damage	Reaction
0	0 No infection	Very Resistant (VR)
1	1-20 of the total plant infected	Resistant(R)
3	21-40 of the total plant infected	Moderate Resistant(MR)
5	41-60 of the total plant infected	Susceptible(S)
7	61-80 of the total plant infected	Moderate Susceptible(MS)
9	81-100 of the total plant infected	Very Susceptible(VS)

2. Leaf spot incidence

Rating	Percent damage	Reaction
0	0 No infection	Very Resistant (VR)
1	1-20 of the total plant infected	Resistant (R)
3	21-40 of the total plant infected	Moderate Resistant (MR)
5	41-60 of the total plant infected	Susceptible(S)

Rating	Percent damage	Reaction
7	61-80 of the total plant infected	Moderate Susceptible (MS)
9	81-100 of the total plant infected	Very Susceptible (VS)

Data Analysis

All quantitative data were analyzed using analysis of variance (ANOVA) in 4 x 5 factor factorial in Randomized Complete Block Design (RCBD) with three replications. The significance of difference among treatments means was tested using Duncan's Multiple Range Test (DMRT) at 5% level of significance.

RESULTS AND DISCUSSION

Meteorological Data

Table 1 shows the temperature, relative humidity, amount of rainfall and light intensity during the conduct of the study. The average temperature was 25.56^{o}C. The average rainfall amount was 142.9 ml. Mean light intensity was 886.52 luces. Relative humidity was 64.9%. Temperature was favorable for peanut production. Peanut grows best in areas with temperature between 20 to 30 ^{0}C.

Plant Survival

Effect of entry. No significant differences were obtained on the percentage survival among the five entries evaluated. The percent survival of the five entries was low though *Bakun* entry showed the highest plant survival among the entries (Table 2).

Table 1. Temperature, relative humidity, amount of rainfall, and light intensity during the conduct of the study

MONTHS	TEMPERATURE MEAN (^{0}C)	RELATIVE HUMIDITY MEAN (%)	RAINFALL (ml)	LIGHT INTENSIY (LUX)
November	30.16	74.50	703.33	1151.33
December	29.50	62.00	6.25	678.75
January	27.20	56.80	0.00	872.00
February	25.50	66.16	5.00	844.00
MEAN	28.09	64.90	142.916	886.52

Effect of organic fertilizer. The survival of five entries was not significantly influenced by the organic fertilizers applied. Plant survival of 78.93% was observed on plants applied with Alnus compost (Table 2).

Interaction effect. No significant interaction effect on plant survival was observed on the plant survival between entry and organic fertilizers applied (Table 2).

Plant Vigor

Effect of entry. Results show that there were no significant differences among the entries on plant vigor observed at 30 DAP. All plants were rated as moderately vigorous. Vigorous plants could be due to addition of nutrients from compost (Acosta, 2007).

Effect of organic fertilizer. Result shows no significant influence of organic fertilizer on the plant vigor of the peanut entries. At 30 DAP, all plants applied with the different organic fertilizers were rated moderately vigorous (Table 2 and Fig. 1).

Interaction effect of organic fertilizer. There was no significant interaction between the entries and organic fertilizers on the plant vigor (Table 2).

Plant Height at 30 DAP

Effect of entry. There were no significant differences observed among the five entries tested on height at 30 DAP (Table 2). Numerically, *Naguey* entry had the highest height with 5.5cm while the lowest was the *Bakun* entry with 5.0 cm.

Table 2. Percent survival and plant height at 30 DAP and 110 DAP of five peanut entries as affected by organic fertilizers

TREATMENT	PERCENT SURVIVAL (%)	PLANT HEIGHT (cm)	
		30 DAP	110 DAP
Peanut Entry (E)			
Bisaw	67.66	5.23	25.30
Putaw	72.88	5.25	27.70
Aknapan	75.91	5.12	24.94
Naguey	77.83	5.59	28.20
Bakun	70.16	5.09	25.45
Organic Fertilizer (O)			
Control	67.66	5.23	25.30
Alnus compost	78.93	5.47[ab]	25.89
BSU-organic fertilizer	71.60	5.79[a]	26.98
Mushroom compost	72.40	4.72[b]	25.99
E x O	ns	ns	ns
CV (%)	26.04	15.95	18.99

Effect of organic fertilizer. The different organic fertilizers did not significantly affect the height of peanut entries at 30 DAP. Plants applied with BSU- organic fertilizer were the tallest with 5.79 cm, followed by the plants applied with Alnus compost with 5.47 cm (Table 2). This could be due to high organic matter present in the BSU-organic fertilizer as indicated by high nitrogen content needed by the crop (Laurean, 2009).

Figure 1. Overview of the plants at 60 DAP

Interaction effect. The interaction between the entries and organic fertilizer did not significantly affect the height of peanut plants at 30 DAP (Table 2).

Height at 110 DAP

Effect of entry. Results showed no significant differences observed among the entries of peanut (Table 2). Although numerically, *Naguey* entry was the tallest with 28.20 cm and *Aknapan* was the lowest with 24.9 cm.

Effect of organic fertilizer. The height of peanut plants applied with the different kinds of organic fertilizers did not differ significantly. Plants applied with BSU-compost were the tallest with 26.98 cm (Table 2).

Interaction effect. Entries and organic fertilizers did not significantly interact to affect height of peanut plants at 110 DAP (Table 2).

Number of Seeds per Pod

Effect of entry. Significant differences on the number of seeds per pod were observed among the different entries of peanut (Table 3). *Bisaw* and *Naguey* had the highest number of seeds per pod while *Putaw* entry had the lowest number of seeds per pod (Table 3).

Effect of organic fertilizer. There were no significant differences observed on the number of seeds produced per pods among the plants applied with different organic fertilizers, though the highest number of seeds produced per pods were obtained from the plants applied with Alnus compost (Table 3).

Table 3. Number of seeds per pod and number and weight of marketable pods per plot of five peanut entries applied different kinds of organic fertilizers

TREATMENT	NUMBER OF SEEDS PER POD	MARKETABLE PODS	
		NUMBER (per $5m^2$)	WEIGHT ($g/5m^2$)
Peanut Entry (E)			
Bisaw	3[a]	87	185
Putaw	2[b]	95	198
Aknapan	2[b]	82	194
Naguey	3[a]	68	159
Bakun	2[b]	80	177
Organic Fertilizer (O)			
Control	2	75.66	188
Alnus compost	3	85	170
BSU-organic fertilizer	2	92	204
Mushroom compost	2	77	167
E x O	*	ns	ns
CV (%)	14.98	30.72	26.82

Interaction effect. Significant interaction was noted between peanut entries and organic fertilizers on seeds per pod. Among the combinations of five peanut entries and the different kinds of organic fertilizers used, *Bisaw* applied with the different kinds of organic fertilizers had the highest number of seeds per pod (Table 3 and Figure 2).

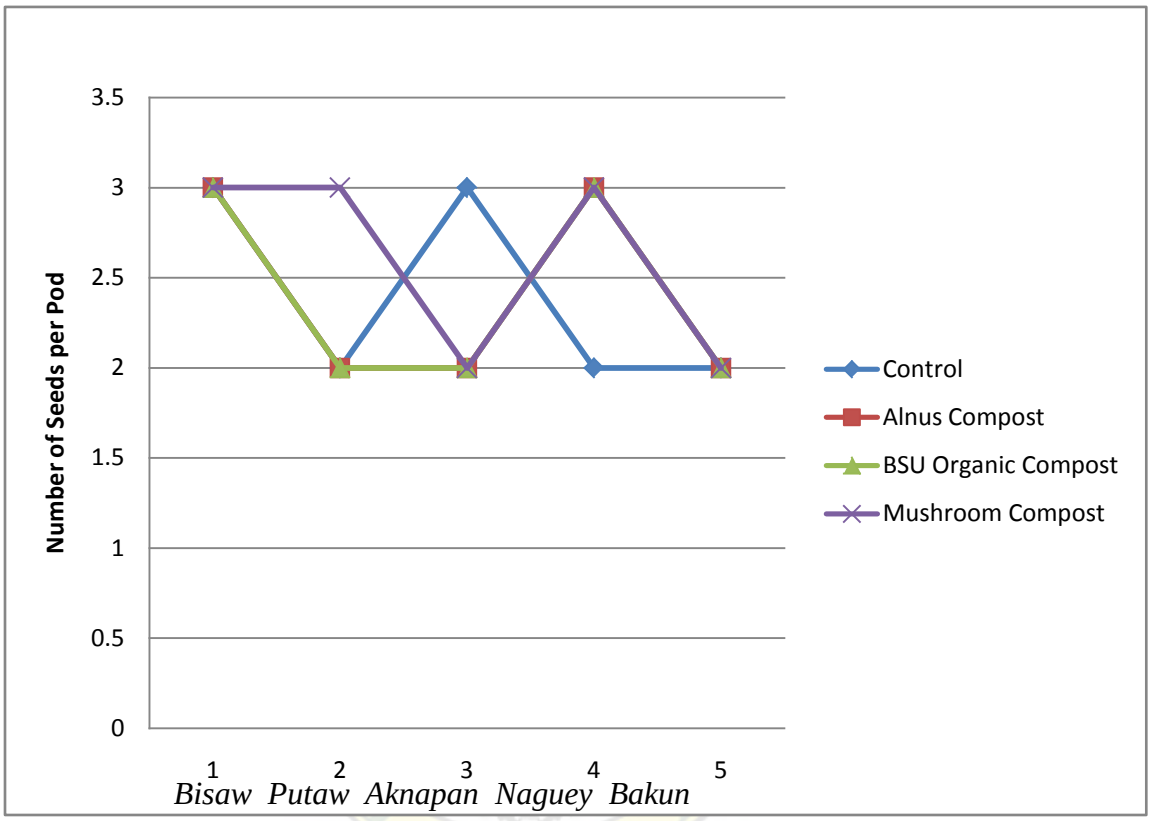

Figure 2. Interaction effect between five peanut entries and the use of different organic fertilizers

Number of Marketable Pods per Plot

Effect of entries. There were no significant differences observed among the five peanut entries on the number of marketable pods per plot. Numerically, *Putaw* entry showed the highest number of marketable seeds per plot.

Effect of organic fertilizer. No significant result was observed on the effect of the different kinds of organic fertilizers on number of marketable seeds (Table 3). Although, the plants applied with BSU-organic fertilizer had the highest number of marketable seeds per plot.

Interaction effect. Entries and organic fertilizers did not interact to affect the number of marketable pods per plot (Table 3).

Weight of Marketable Pods per Plot

Effect of entries. Among the five entries tested, there were no significant differences observed. Numerically, the entries *Putaw*, *Aknapan* and Bisaw had the highest weight of marketable pods per plot (Table 3).

Effect of organic fertilizer. The weight of marketable pods was not significantly different among the different kinds of organic fertilizers used though, plants applied with BSU- organic fertilizer produced the highest weight of marketable pods (Table 3).

Interaction effect. Entries and organic fertilizers did not significantly interact to affect the weight of marketable pods.

Number of Non-marketable Pods per Plot

Effect of entry. There were no significant differences observed on the number of non-marketable pods among the five entries. *Bisaw* had the highest number of non-marketable pods (Table 4).

Table 4. Number and weight of non-marketable pods per plot of five peanut entries applied with different kinds of organic fertilizers

TREATMENT	NON-MARKETABLE PODS	
	NUMBER (Per $5m^2$)	WEIGHT ($g/5m^2$)
Peanut Entry (E)		
Bisaw	49	86
Putaw	46	95
Aknapan	47	79
Naguey	60	68
Bakun	47	80
Organic Fertilizers (O)		
Control	54	77
Alnus compost	47	85
BSU-organic fertilizer	48	92
Mushroom compost	50	72
E x O	ns	ns
CV (%)	30.86	32.43

Effect of organic fertilizer. No significant differences were observed among the plants applied with the different organic fertilizers.

Interaction effect. Peanut entries and organic fertilizers did not significantly interact to affect the number of non-marketable pods per plot.

Weight of Non-marketable Pods per Plot

Effect of entry. The five entries had no significant differences observed on the weight of non-marketable pods per plot (Table 4). *Putaw* and *Bisaw* had the highest weight of non-marketable pods per plot. *Naguey* showed the lowest weight of non-marketable pods per plot.

Effect of organic fertilizer. No significant differences were observed among the plants applied with the different organic fertilizers. Numerically, plants applied with BSU-organic fertilizer had the highest weight of non-marketable pods per plot (Table 4).

Interaction effect. There was no significant interaction between the peanut entries and organic fertilizers on the weight of non-marketable pods per plot (Table 4).

Total Plot Yield

Effect of entry. Results showed that there were no significant effect of entries on the total plot yield. Numerically, *Putaw* had the highest total plot yield (Table 5). Generally, low yield was produced by the peanut entries. Low yield may be attributed to immature pods harvested. Plant were harvested as early as 110 DAP.

Effect of organic fertilizer. Total plot yield of plants applied with the different kinds of organic fertilizers did not differ significantly (Table 5). Plants applied with BSU-organic fertilizer produced the highest yield.

Interaction effect. No significant interaction effect was observed on the total yield between entry and organic fertilizers applied.

Computed Yield per Hectare (t/ha)

Effect of entry. Results showed no significant differences among the entries of peanut (Table 5). *Naguey* entry had the lowest yield with 46t/ha.

Table 5. Total and computed yield of five peanut entries applied with different kinds of organic fertilizers

TREATMENT	YIELD	
	($g/5m^2$)	(t/ha)
Peanut Entry (E)		
Bisaw	272	0.57
Putaw	292	0.59
Aknapan	276	0.55
Naguey	227	0.46
Bakun	257	0.51
Organic Fertilizers (O)		
Control	264	0.53
Alnus compost	255	0.51
BSU-organic fertilizer	296	0.55
Mushroom compost	243	0.46
E x O	ns	ns
CV (%)	25	26

Effect of organic fertilizer. Yield per hectare was not significantly influenced by the organic fertilizers applied. Computed yield ranged from 0.46 to 0.51 t/ha. Plants applied with BSU- organic compost produced the highest yield (Table 5).

Interaction effect. No significant interaction effect was observed on the yield per hectare between entry and organic fertilizers applied.

Reaction to Leaf Spot

Effect of entry. The response of entries on leaf spot was not significantly different. All the entries were rated as resistant.

Effect of organic fertilizer. The application of different organic fertilizers did not differ significantly on the reaction to leaf spot. All plants applied with organic fertilizers were rated as resistant.

Interaction effect. Entries and organic fertilizers did not significantly interact to affect the reaction to leaf spot.

Reaction to Leaf Miner Incidence

Effect of entries. Results show no significant differences among the peanut entries applied with the different kinds of organic fertilizers. All entries were rated as resistant.

Effect of organic fertilizer. Results show no significant differences on the leaf miner response of plants applied with organic fertilizers. All plants applied with organic fertilizers were rated as resistant.

Interaction effect. Results show that entries and organic fertilizer had no significant interaction to affect the leaf miner response.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study was conducted from November 2010 to March 2011 Beleng-belis, Kapangan, Benguet, to: determine the growth and yield of peanut entries applied with different organic fertilizers; determine the best organic fertilizer that will produce significant yield on the peanut entries; and determine the interaction effect of peanut entry and organic fertilizer on the different parameters.

Among the peanut entries, *Bisaw* and *Naguey* significantly produced the highest number of seeds per pod. *Putaw* had the highest weight of marketable pods and yield per plot. Interaction between peanut entry and organic fertilizers was observed on number of seeds per pod. The other parameters however were not affected by the interaction of peanut entry and organic fertilizers applied. Numerically, the best combination based on marketable yield and total yield is entry *Putaw* entry applied with BSU- organic fertilizer.

Conclusions

Putaw is the highest producer of marketable pods. Plants applied with BSU-organic fertilizer produced the highest marketable and total yield. *Bisaw* applied with BSU- organic fertilizer is the best combination based on weight of marketable pods and total yield.

Recommendations

Based on the conditions of the study and early harvesting, *Putaw* entry could be recommended for peanut production under Beleng-belis, Kapangan, Benguet condition. BSU-organic fertilizer can be applied for peanut production, however, cost should be

considered. Application of BSU-organic fertilizer on *Bisaw* entry is recommended, considering the cost to be incurred.

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APPENDICES

Appendix Table 1. Percent survival of five peanut entries as affected by organic fertilizers at 110 DAP

TREATMENT	BLOCK			TOTAL	MEAN
	I	II	III		
V_1T_O	28	86	68	182	60.66
T_1	89	91	44	224	74.66
T_2	65	63	75	203	67.66
T_3	28	94	81	203	67.66
V_2T_O	43	75	79	197	65.66
T_1	69	88	74	231	77.00
T_2	85	88	83	256	85.33
T_3	75	90	25	190	63.33
V_3T_O	83	75	74	232	77.33
T_1	79	100	74	253	84.33
T_2	66	80	50	196	65.33
T_3	65	80	85	230	76.66
V_4T_O	59	60	80	209	69.66
T_1	73	100	68	241	80.33
T_2	85	89	60	234	78.00
T_3	80	100	80	260	86.66
V_5T_O	86	94	39	219	73.00
T_1	69	100	66	235	78.33
T_2	81	100	54	235	78.33
T_3	65	84	0	149	49.66

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREE OF FREEDOM	SUM OF AQUARES	MEAN SQUARE	COMPUTED F	TABULAR F 5%	TABULAR F 1%
Replication	2	6154.53	3077.26			
Treatment	19	3724.85	196.04	0.54^{ns}	1.87	2.44
Factor (a)	4	819.60	204.90	0.57^{ns}	2.62	3.86
Factor (b)	3	852.45	284.15	0.78^{ns}	2.85	4.34
A x B	12	2052.45	171.06	0.45^{ns}	2.02	2.69
Error	38	13684.80	360.12			
TOTAL	59					

^{ns}- Not significant CV= 26.04%

TWO-WAY TABLE

		ORGANIC FERTILIZERS				
ENTRY	CONTROL	ALNUS	BSU-ORGANIC FERTILIZER	MUSHROOM COMPOST	TOTAL	MEAN
Bisaw	60.66	74.66	67.66	67.66	270.64	90.21
Putaw	65.66	77.00	85.33	63.33	291.32	97.10
Aknapan	77.33	84.33	65.33	76.66	301.76	100.58
Atok	69.66	80.33	78.00	86.66	314.65	104.88
Bakun	73.00	78.33	78.33	49.66	179.32	93.10
TOTAL					222.654	
MEAN						485.87

Appendix Table 2. Initial height of five peanut entries as affected by organic fertilizers at 30 DAP

TREATMENT	BLOCK			TOTAL	MEAN
	I	II	III		
V_1T_O	4.25	5.100	5.10	14.45	4.81
T_1	5.85	5.00	4.65	15.50	5.16
T_2	6.80	5.30	5.95	18.05	6.01
T_3	5.05	4.95	4.85	14.85	4.95
V_2T_O	4.35	5.15	5.90	15.40	5.13
T_1	5.50	5.20	5.65	16.35	5.45
T_2	6.0	5.05	5.30	16.35	5.45
T_3	5.15	4.55	5.20	14.90	4.96
V_3T_O	5.30	5.05	5.10	15.45	5.15
T_1	4.45	4.70	5.60	14.75	4.91
T_2	5.35	5.60	6.00	16.95	5.65
T_3	4.45	4.75	5.15	14.35	4.78
V_4T_O	4.35	4.35	6.00	14.70	4.90
T_1	6.05	6.10	6,15	18.30	6.10
T_2	6.30	5.50	5.85	17.65	5.88
T_3	5.50	5.15	5.75	16.40	5.46
V_5T_O	5.10	5.30	5.20	15.60	5.20
T_1	5.35	5.40	6.50	17.25	5.75
T_2	6.05	5.67	6.26	17.97	5.99
T_3	4.80	5.50	0.00	10.30	3.43

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREE OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	COMPUTED F	TABULAR F	
					5%	1%
Replication	2	0.25	0.12			
Treatment	19	20.74	1.09	1.56^{ns}	1.87	2.44
Factor (a)	4	1.91	0.47	0.68^{ns}	2.62	3.86
Factor (b)	3	10.10	3.36	4.81^{**}	1.85	4.24
A x B	12	8.72	0.72	1.04^{ns}	2.02	2.69
Error	38	26.60	0.70			
TOTAL	59	47.60				

^{ns} - Not significant CV= 15.91%

** - Highly significant

TWO-WAY TABLE

		ORGANIC FERTILIZERS				
ENTRY	CONTROL	ALNUS	BSU-ORGANIC FERTILIZER	MUSHROOM COMPOST	TOTAL	MEAN
Bisaw.	4.81	5.16	6.01	4.95	20.93	5.2
Putaw	5.13	5.45	5.45	4.96	20.99	5.3
Aknapan	5.15	4.91	5.65	4.78	20.49	5.1
Atok	4.9	6.1	5.88	5.46	22.34	5.6
Bakun	5.2	5.75	5.99	3.43	20.37	5.1
TOTAL					21	
MEAN					4.2	5.3

Appendix Table 3. Final height of five peanut entries as affected by organic fertilizers at 110 DAP

TREATMENT	BLOCK				
	I	II	III	TOTAL	MEAN
V_1T_O	19.84	22.31	22.75	64.90	21.63
T_1	20.70	25.96	24.83	71.49	23.83
T_2	29.93	23.99	35.65	89.57	29.85
T_3	22.90	24.55	31.40	78.85	26.28
V_2T_O	23.05	25.60	27.05	75.70	25.23
T_1	29.35	24.92	29.85	84.12	28.04
T_2	29.05	24.89	31.94	85.88	28.62
T_3	24.88	24.74	28.91	78.53	26.17
V_3T_O	26.30	24.68	28.28	79.26	26.42
T_1	25,05	21.64	21.11	67.80	22.60
T_2	27.20	24.00	25.25	76.45	25.48
T_3	22.50	26.26	27.11	75.87	25.29
V_4T_O	24.80	23.92	32.90	81.62	27.20
T_1	26.75	27.91	32.23	86.89	28.96
T_2	29.85	33.36	33.36	96.57	32.19
T_3	22.50	29.40	21.50	73.40	24.46
V_5T_O	26.69	30.73	28.46	85.88	28.62
T_1	24.60	29.31	26.76	80.67	26.89
T_2	29.20	29.12	0.00	87.03	29.01
T_3	25.45	27.40	28.71	52.85	17.61

ANALYSIS OF VARIANCE

SOURDE OF VARIATION	DEGREE OF FREEDOM	SUM OF SQUARE	MEAN SQUARE	COMPUTED F	TABULAR F	
					5%	1%
Replication	2	23.41	11.70			
Treatment	19	486.15	25.58	1.03^{ns}	1,03	2.44
Factor (a)	4	96.04	24.01	0.97^{ns}	2.62	3.86
Factor (b)	3	11.55	3.85	0.15^{ns}	1.85	4.34
A x B	12	378.55	31.54	1.27^{ns}	2.02	2.69
Error	38	942.97	24.81			
TOTAL	59	1452.54				

^{ns}- Not Significant CV= 18.99%

TWO-WAY TABLE

		OGANIC FETILIZERS				
ENTRY	CONTROL	ALNUS	BSU-ORGANIC FERTILIZER	MUSHROOM COMPOST	TOTAL	MEAN
Bisaw.	21.63	23.83	29.85	26.28	101.59	25
Putaw	25.23	28.04	28.62	26.17	108.06	27
Aknapan	26.42	22.6	25.48	25.29	99.79	25
Atok	27.20	28.96	32.19	24.46	112.81	28
Bakun	28.62	26.89	29.01	17.61	102.13	26
TOTAL					524	132
MEAN					105	26

Appendix Table 4. Number of seeds per pods of five peanut entries as affected by organic fertilizers

TREATMENT	BLOCK			TOTAL	MEAN
	I	II	III		
V_1T_O	3	3	3	9	3
T_1	3	3	3	9	3
T_2	3	3	3	9	3
T_3	3	2	3	8	3
V_2T_O	2	2	2	6	2
T_1	2	2	2	6	2
T_2	2	2	2	6	2
T_3	3	3	2	8	3
V_3T_O	2	3	3	9	3
T_1	3	2	2	7	2
T_2	3	2	2	7	2
T_3	2	2	2	6	2
V_4T_O	2	3	2	7	2
T_1	3	3	3	9	3
T_2	3	3	2	8	3
T_3	3	3	3	9	3
V_5T_O	3	2	2	7	2
T_1	3	2	2	7	2
T_2	3	2	2	7	2
T_3	3	2	2	7	2

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREE OF FREEDOM	SUM OF SQUARE	MEAN SQUARE	COMPUTED F	TABULAR F 5%	TABULAR F 1%
Replication	2	1.23	.61			
Treatment	19	5.56	2.56			
Factor (a)	4	.183	1.39	11.09^{**}	2.62	3.86
Factor (b)	3	3.23	0.06	$.48^{ns}$	2.85	4.34
A x B	12	4.67	.26	2.14^{*}	2.02	2.69
Error	38	3.56	.12			
TOTAL	59	14.98				

^{ns}- Not Significant CV= 14.07%
** - highly significant
* - Significant

TWO-WAY TABLE

		ORGANIC FERTILIZERS				
ENTRY	CONTROL	ALNUS	BSU-ORGANIC FERTILIZER	MUSHROOM COMPOST	TOTAL	MEAN
Bisaw.	3	3	3	3	12	3
Putaw	2	2	2	3	9	2
Aknapan	3	2	2	2	10	2
Atok	2	3	3	3	11	3
Bakun	2	2	2	2	10	2
TOTAL					50	13
MEAN					10	3

Appendix Table 5. Number of marketable seeds of five peanut entries as affected by organic fertilizers

TREATMENT	BLOCK			TOTAL	MEAN
	I	II	III		
V_1T_O	82	68	55	205	68
T_1	194	67	37	298	99
T_2	123	107	78	308	103
T_3	125	81	32	238	79
V_2T_O	122	111	5	238	79
T_1	125	84	65	274	91
T_2	202	119	65	386	129
T_3	125	81	32	238	79
V_3T_O	113	80	74	267	89
T_1	108	80	61	249	83
T_2	77	67	61	205	68
T_3	108	73	83	264	88
V_4T_O	60	66	27	153	51
T_1	116	80	55	251	84
T_2	91	91	33	215	72
T_3	75	64	60	199	66
V_5T_O	125	103	44	272	91
T_1	67	78	64	209	70
T_2	103	85	80	268	89
T_3	128	84	0	212	71

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREE OF FREEDOM	SUM OF SQUARE	MEAN SQUARE	COMPUTED F	TABULAR F	
					5%	1%
Replication	2	39592.13	19796.06			
Treatment	19	15582.82	820.12	1.28^{ns}	1.87	2.44
Factor (a)	4	4603.90	1150.97	1.79^{ns}	2.62	3.86
Factor (b)	3	2717.38	905.79	1.41^{ns}	1.85	4.34
A x B	12	8261.03	688.41	1.07^{ns}	2.02	2.69
Error	38	24392.53	641.90			
TOTAL	59	79566.98				

^{ns}- Not Significant CV= 30.72%

TWO-WAY TABLE

		ORGANIC FERTILIZERS				
ENTRY	CONTROL	ALNUS	BSU-ORGANIC FERTILIZER	MUSHROOM COMPOST	TOTAL	MEAN
Bisaw.	68	99	103	79	350	87
Putaw	79	91	129	79	379	95
Aknapan	89	83	68	88	328	82
Atok	51	84	72	66	273	68
Bakun	91	70	89	71	320	80
TOTAL		427	461	384	1650	412
MEAN		142	154	128	330	83

Appendix Table 6. Weight of marketable seeds of five peanut entries as affected by organic fertilizers

TREATMENT	BLOCK			TOTAL	MEAN
	I	II	III		
V_1T_O	200	180	100	480	160
T_1	220	140	170	530	176
T_2	330	260	170	760	253
T_3	135	120	200	455	151
V_2T_O	275	280	120	675	225
T_1	270	200	145	615	205
T_2	205	260	150	615	205
T_3	270	140	060	470	156
V_3T_O	290	200	150	640	213
T_1	230	180	145	555	185
T_2	295	180	150	535	178
T_3	250	175	170	595	198
V_4T_O	150	180	050	380	126
T_1	140	200	140	480	160
T_2	245	240	065	550	183
T_3	190	160	150	500	166
V_5T_O	322	240	090	652	217
T_1	180	130	062	372	124
T_2	240	200	165	605	201
T_3	300	190	0.00	490	163

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREE OF FREEDOM	SUM OF SQUARE	MEAN SQUARE	COMPUTED F	TABULAR F	
					5%	1%
Replication	2	.12	.06	25.77^{ns}		2.42
Treatment	19	.16	.87	1.12^{ns}		2.42
Factor (a)	4	.01	.03	1.19^{ns}	1.86	2.42
Factor (b)	3	.01	.04	1.86^{ns}	1.86	2.42
A x B	12	.03	.03	1.27^{ns}	1.86	2.42
Error	38	09	.02			
TOTAL	59	.27				

^{ns}- Not significant CV= 26.81%

TWO-WAY TABLE

ENTRY	CONTROL	ORGANIC FERTILIZERS			TOTAL	MEAN
		ALNUS	BSU-ORGANIC FERTILIZER	MUSHROOM COMPOST		
Bisaw.	16	176	253	151	740	16
Putaw	225	205	205	156	791	19
Aknapan	213	185	178	198	774	94
Atok	126	16	183	166	635	16
Bakun	217	124	201	163	705	18
TOTAL					3645	163
MEAN					729	33

Appendix Table 7. Number of non-marketable pods per plot of five peanut entries as affected by organic fertilizers

TREATMENT	BLOCK			TOTAL	MEAN
	I	II	III		
V_1T_O	53	35	58	146	47
T_1	20	53	72	145	48
T_2	40	31	71	142	47
T_3	29	63	66	158	53
V_2T_O	19	51	58	128	43
T_1	19	45	40	104	35
T_2	17	40	60	117	39
T_3	37	73	97	207	69
V_3T_O	45	41	60	146	49
T_1	39	64	42	145	48
T_2	48	34	56	138	46
T_3	36	53	50	139	46
V_4T_O	64	64	88	216	72
T_1	17	61	71	149	50
T_2	45	49	89	183	61
T_3	36	89	49	174	58
V_5T_O	50	46	77	173	58
T_1	47	70	56	173	58
T_2	34	50	61	145	48
T_3	32	45	0	77	26

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREE OF FREEDOM	SUM OF SQUARE	MEAN SQUARE	COMPUTED F	TABULAR F	
					5%	1%
Replication	2	6330.53	3165.26			
Treatment	19	6615.25	348.17	1.46^{ns}	1.87	2.44
Factor (a)	4	1578.66	394.66	1.65^{ns}	2.62	3.86
Factor (b)	3	352.05	117.35	0.49^{ns}	1.85	4.34
A x B	12	4684.53	390.37	1.63^{ns}	2.02	2.69
Error	38	9076.80	238.86			
TOTAL	59	22022.58				

^{ns}- Not significant CV= 30.86%

TWO-WAY TABLE

		ORGANIC FERTILIZERS				
ENTRY	CONTROL	ALNUS	BSU-ORGANIC FERTILIZER	MUSHROOM COMPOST	TOTAL	MEAN
Bisaw.	49	48	47	53	58	14
Putaw	43	35	39	69	58	14
Aknapan	49	48	46	46	58	14
Atok	72	50	61	58	58	14
Bakun	58	58	48	26	58	14
TOTAL					189	72
MEAN					38	14

Appendix Table 8. Weight of non-marketable pods per plot (g) of five peanut as affected by organic fertilizers

TREATMENT	BLOCK			TOTAL	MEAN
	I	II	III		
V_1T_O	82	68	55	205	68
T_1	94	67	37	295	98
T_2	123	107	78	308	102
T_3	75	59	91	225	75
V_2T_O	122	111	5	238	79
T_1	125	84	65	274	91
T_2	202	119	65	386	128
T_3	125	81	32	238	79
V_3T_O	113	80	74	267	89
T_1	108	80	61	249	83
T_2	77	67	61	205	68
T_3	108	73	83	264	88
V_4T_O	60	66	27	153	51
T_1	116	80	55	251	83
T_2	91	91	33	215	71
T_3	75	64	60	199	66
V_5T_O	125	103	44	272	90
T_1	67	78	64	209	69
T_2	103	85	80	268	89
T_3	128	84	0	212	70

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREE OF FREEDOM	SUM OF SQUARE	MEAN SQUARE	COMPUTED F	TABULAR F	
					5%	1%
Replication	2	.03	.01	26.96^{ns}		
Treatment	19	.16	.87	1.12^{ns}		
Factor (a)	4	.05	.01	1.64^{ns}	1.86	2.42
Factor (b)	3	.04	.01	1.72^{ns}	1.86	2.42
A x B	12	.8	.01	$.99^{ns}$	1.86	2.42
Error	38	.02	.01			
TOTAL	59	.081				

^{ns}- Not significant CV= 32.43%

TWO-WAY TABLE

ENTRY	CONTROL	ORGANIC FERTILIZERS			TOTAL	MEAN
		ALNUS	BSU-ORGANIC FERTILIZER	MUSHROOM COMPOST		
Bisaw.	68	98	102	75	343	100
Putaw	79	91	128	79	377	100
Aknapan	89	83	68	88	328	100
Atok	51	83	71	66	271	100
Bakun	90	69	89	70	318	100
TOTAL					1637	500
MEAN					300	100

Appendix Table 9. Total plot yield of five peanut entries as affected by organic fertilizers by organic fertilizers

TREATMENT	BLOCK			TOTAL	MEAN
	I	II	III		
V_1T_O	282	248	155	685	228
T_1	414	207	207	825	275
T_2	453	367	248	1.06	356
T_3	210	179	291	680	226
V_2T_O	397	391	125	913	304
T_1	395	284	210	889	296
T_2	407	379	215	1.00	333
T_3	950	221	920	708	236
V_3T_O	403	280	224	907	302
T_1	338	260	206	804	268
T_2	282	247	211	740	246
T_3	358	248	253	859	286
V_4T_O	210	246	770	533	177
T_1	256	280	195	731	243
T_2	336	331	980	765	255
T_3	265	224	210	699	233
V_5T_O	447	343	134	924	308
T_1	247	208	126	581	193
T_2	343	285	245	873	291
T_3	428	274	0.00	702	234

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREE OF FREEDOM	SUM OF SQUARE	MEAN SQUARE	COMPUTED F	TABULAR F	
					5%	1%
Replication	2	.28	.14			
Treatment	19					
Factor (a)	4	.02	.07	1.61^{ns}	2.62	3.86
Factor (b)	3	.0	.08	1.79^{ns}	2.85	4.34
A x B	12	.06	.05	1.24^{ns}	2.02	2.69
Error	38	.16	.04			
TOTAL	59	.564				

^{ns}- Not significant CV= 25.03%

TWO-WAY TABLE

ENTRY	CONTROL	ORGANIC FERTILIZERS			TOTAL	MEAN
		ALNUS	BSU-ORGANIC FERTILIZER	MUSHROOM COMPOST		
Bisaw.	228	275	356	226	1085	271
Putaw	304	296	333	236	1169	292
Aknapan	302	268	246	286	1102	276
Atok	177	243	255	233	908	227
Bakun	308	193	291	234	1026	257
TOTAL					5290	1323
MEAN					1058	265

Appendix Table 10. Computed yield per hectare of five peanut as affected by organic fertilizers

TREATMENT	BLOCK			TOTAL	MEAN
	I	II	III		
V_1T_O	564	496	310	1370	456
T_1	828	414	414	1656	552
T_2	906	734	828	2468	822
T_3	420	358	582	1360	453
V_2T_O	794	782	250	1826	608
T_1	790	568	420	1778	592
T_2	814	758	430	2002	667
T_3	794	442	184	1420	473
V_3T_O	806	560	448	1814	604
T_1	676	520	412	1608	536
T_2	564	494	422	1480	493
T_3	716	496	506	1718	572
V_4T_O	420	492	154	1066	355
T_1	512	560	390	1462	487
T_2	672	662	196	1530	510
T_3	530	448	420	1422	474
V_5T_O	894	686	268	1848	616
T_1	494	416	252	1162	387
T_2	686	570	490	1746	582
T_3	856	548	0.00	1404	468

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DEGREE OF FREEDOM	SUM OF SQUARE	MEAN SQUARE	COMPUTED F	TABULAR F	
					5%	1%
Replication	2	1.01	.50			
Treatment	19					
Factor (a)	4	0.13	.03	1.76^{ns}	2.62	3.86
Factor (b)	3	.14	.04	2.49^{ns}	2.85	4.34
A x B	12	.35	.02	1.57^{ns}	2.02	2.69
Error	38	.71	.01			
TOTAL	59	2.53				

^{ns}- Not significant CV= 25.61%

TWO-WAY TABLE

		ORGANIC FERTILIZERS				
ENTRY	CONTROL	ALNUS	BSU-ORGANIC FERTILIZER	MUSHROOM COMPOST	TOTAL	MEAN
Bisaw.	.456	.552	.822	.453	2.283	.6
Putaw	.608	.592	.667	.473	2.34	.6
Aknapan	.604	.536	.493	.572	2.21	.6
Atok	.355	.487	.51	.474	1.83	.5
Bakun	.616	.387	.582	.468	2.1	.5
TOTAL					10.763	2.8
MEAN					2.1	.56