

BIBLIOGRAPHY

AGOD, ESTHER B. APRIL 2013. Intercropping Lettuce (*Lactuca sativa*) and onion (*Allium cepa*) under Tinglayan, Kalinga condition. Benguet State University, La Trinidad Benguet.

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ABSTRACT

The study was conducted to evaluate the growth and yield performance and economics of intercropping lettuce and green onion.

Results showed that significantly higher marketable yield was obtained when lettuce and green onion was planted alone in two rows per plot or when one row of onion was intercropped with two rows of lettuce or when lettuce was planted in two rows per plot. With these intercropping schemes, high return on investment of 320.86% and 253.84% respectively were realized.



RESULTS AND DISCUSSION

Final Height at Harvest

Table 1 shows that lettuce planted in two rows and onion planted in two rows obtained the tallest height of 31.06 and 52.88 cm respectively. While the shortest length of lettuce and onion was obtained in two rows green onion + one row of lettuce at 27.88 and 45.5 cm, respectively.

Average plant weight

Table 2 shows that lettuce and onion with the higher weight was obtained in planting two rows onion and lettuce alone per plot at 0.51 and 1.21 kg, respectively. While the lowest weight of lettuce and onion was obtained in planting one row green onion and one row lettuce at 0.19 and 0.47 kg, respectively.

Table 1. Plant height at harvest (cm)

TREATMENT	MEAN (cm)	
	Lettuce	Green Onion
Two rows onion		52.88 ^a
Two rows lettuce	31.06 ^a	
Two rows lettuce + one row green onion	29.88 ^a	45.69 ^a
Two rows green onion + one row lettuce	27.88 ^a	45.5 ^a
One lettuce + one row green onion	28.56 ^a	5.75 ^a

In a column, means with a common letter are not significantly different at 5% level by DMRT



Table 2. Average plant weight (kg)

TREATMENT	MEAN (kg)	
	Lettuce	Green Onion
Two rows onion		1.21 ^a
Two rows lettuce	0.51 ^a	
Two rows lettuce + one row green onion	0.5 ^a	0.18 ^a
Two rows green onion + one row lettuce	0.49 ^a	0.19 ^a
One lettuce + one row green onion	0.47 ^a	0.19 ^b

In a column, means with a common letter are not significantly different at 5% level by DMRT

Marketable Yield

Table 3 shows that lettuce planted in two rows and planting two rows of lettuce + one row green onion significantly had higher marketable yield of 12.54 kg and 12 kg, respectively, while the lowest marketable yield of 5.76 kg was obtained from one row lettuce + one row green onion. In onion, planting two rows green onion alone and planting two rows green onion + one row lettuce significantly had higher marketable yield of 4.92 kg and 4.68 kg, respectively while the lowest marketable yield of 2.25 kg was obtained from one row green onion+ one row lettuce.



Table 3. Marketable yield (kg)

TREATMENT	MEAN (kg)	
	Lettuce	Green Onion
Two rows onion		4.92 ^a
Two rows lettuce	12.54 ^a	
Two rows lettuce + one row green onion	12 ^a	2.25 ^b
Two rows green onion + one row lettuce	5.94 ^b	4.68 ^a
One lettuce + one row green onion	5.76 ^b	2.28 ^b

In a column, means with a common letter are not significantly different at 5% level by DMRT

Non-marketable yield

The non-marketable yield of lettuce and green onion was not significantly affected by the intercropping schemes evaluated (Table 4).

Table 4. Non-Marketable Yield (kg)

TREATMENT	MEAN (kg)	
	Lettuce	Green Onion
Two rows onion		0
Two rows lettuce	0	
Two rows lettuce + one row green onion	0	0
Two rows green onion + one row lettuce	0	0
One lettuce + one row green onion	0	0

In a column, means with a common letter are not significantly different at 5% level by DMRT



Total Yield

Presented in Table 5 is the yield per plot as affected by different intercropping schemes evaluated. Results showed that two rows lettuce and two rows lettuce + one row green onion significantly had the highest total yield of lettuce of 12.54 kg and 12 kg, respectively. In green onion, planting two rows green onion alone and planting two rows green onion row lettuce had higher yield of 4.92 kg and 4.68 kg, respectively.

Computed Yield

Presented in Table 6 is the computed yield of lettuce and green onion. Result shows that lettuce planted in two rows and planting two rows lettuce + one row green onion significantly had higher computed yield of 27.86 and 26.65 t/ha, respectively. Two rows green onion and two rows green onion+ one row lettuce significantly had higher computed total yield of green onion 4.9 and 4.68 t/ha, respectively.

Table 5. Total yield(kg)

TREATMENT	MEAN (kg)	
	Lettuce	Green Onion
Two rows onion		4.9 ^a
Two rows lettuce	12.54 ^a	
Two rows lettuce + one row green onion	12 ^a	2.25 ^b
Two rows green onion + one row lettuce	5.94 ^b	4.68 ^a
One lettuce + one row green onion	5.76 ^b	2.28 ^b



In a column, means with a common letter are not significantly different at 5% level by DMRT

TREATMENT	MEAN (t/ha)	
	Lettuce	Green Onion
Two rows onion		10.93 ^a
Two rows lettuce	27.86 ^a	
Two rows lettuce + one row green onion	26.65 ^a	4.99 ^b
Two rows green onion + one row lettuce	13.19 ^b	10.39 ^a
One lettuce + one row green onion	12.66 ^b	5.06 ^b

In a column, means with a common letter are not significantly different at 5% level by DMRT

Other Observations

Incidence of insect pests and diseases. There were no occurrence of insects and diseases evaluated.

Incidence of allelopathy. The growth and yield of lettuce and green onion was not affected by possible allelopathy effects of the intercrops.

Economic analysis

Table 7 shows the cost and return analysis of lettuce and green onion production as affected by different intercropping schemes evaluated. Planting two rows lettuce + one row green onion and planting two rows of lettuce were more profitable at 320.86% and 252.84, respectively, while the lowest ROI of 31.03% was realized from planting two rows of green onion.



Table 7. Economic analysis (20 m² area)

PARTICULAR	TREATMENT				
	T1	T2	T3	T4	T5
Marketable Yield (kg)	19.68	50.16	57	42.48	31.92
A. Sales (Php)	787.2	2508	2760	1963.8	1504.8
B. Expenses					
1. Seeds					
a. Lettuce 90			180	90	180
b. green onion 35		70		35	70
2. Fertilizer					
a. 14-14-14 55.8		55.8	55.8	55.8	55.8
b. 0-0-24 25		25	25	25	25
3. Labor	450	450	450	450	450
Total Expenses	600.8	710.8	655.8	780.8	655.8
C. Net Profit	186.4	1797.2	2104.2	1156	849
D. ROI (%) 129.46		31.03	252.84	320.86	148.05
E. Rank	5	2	1	3	4

Note: The selling price of lettuce per kilo during harvest was Php 50.00 while onion was sold Php 40.00/kg.

Legend:

T1= Two rows green onion

T2= Two rows lettuce

T3= Two rows lettuce + one row green onion

T4= Two rows green onion + one row lettuce

T5= one row lettuce + one row green onion





Figure 1. Overview of the experimental field



Figure 2. Overview of the treatments in replication 1; (A) Two rows onion (T1); (B) Two rows lettuce (T2); (C) Two rows lettuce + row onion at the center (T3); (D) Two rows onion + one row lettuce at the center (T4); (E) One row onion + one row lettuce (T5)



Figure 2. Overview of the treatments in replication 2; (A) Two rows onion (T1); (B) Two rows lettuce (T2); (C) Two rows lettuce + row onion at the center (T3); (D) Two rows onion + one row lettuce at the center (T4); (E) One row onion + one row lettuce (T5)



Figure 2. Overview of the treatments in replication 3; (A) Two rows onion (T1); (B) Two rows lettuce (T2); (C) Two rows lettuce + row onion at the center (T3); (D) Two rows onion + one row lettuce at the center (T4); (E) One row onion + one row lettuce (T5)



Figure 2. Overview of the treatments in replication 4; (A) Two rows onion (T1); (B) Two rows lettuce (T2); (C) Two rows lettuce + row onion at the center (T3); (D) Two rows onion + one row lettuce at the center (T4); (E) One row onion + one row lettuce (T5)

SUMMARY, CONCLUSION AND RECOMMENDATION

Summary

This study was conducted in TinglayanKalinga from October 2012 and February 2013 to evaluate the growth and yield of lettuce and green onion intercropped with one another, asses the economics of intercropping lettuce and green onion, and to determine the appropriate intercropping schemes for lettuce and green onion.

Results showed that planting two rows green onion and two rows lettuce alone per plot obtained the longest length at 31.06 cm and 52.88 cm, respectively. Planting two rows of lettuce per plot and two rows of onion per plot significantly had the higher weight of 0.51 and 1.21, respectively. There were no Non-marketable yield and No incidence of insect pests and diseases evaluated.Result shows that lettuce planted in two rows and planting two rows lettuce + one row green onion significantly had higher computed yield of 27.86 and 26.65 t /ha, respectively. Two rows green onion and two rows green onion+ one row lettuce significantly had higher computed total yield of green onion at 4.9 and 4.68 t/ha, respectively.

Results of the study also showed that significantly higher marketable yield was obtained when lettuce was planted alone per plot in two rows or when one row of green onion was intercropped at the center of two rows of green onion and these intercropping schemes affected high return on investment of 320.86% and 252.84%, respectively.

Observations also show that lettuce and onion are compatible crops.



Conclusion

Based on the results, it is inferred that planting two rows of lettuce or two rows of lettuce plus one row green onion per plot have the high yield and high return of investment.

Recommendation

It is therefore recommended, that intercropping of green onions and lettuce grows well under Tinglayan, Kalinga conditon. Intercropping two rows of lettuce plus one row of green onion or two rows of lettuce per plot should be done to obtain higher yield of the crops and greater profit per area.



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