

VARIETAL PERFORMANCE OF ADLAI (*Coix lacryma-jobi L.*)

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ABSTRACT

This study aimed to determine the performance of Adlai Varieties grown in Caniangan, Tangub City. This experimental study was conducted at a total area of 286 sq. meters including canals. The area was divided into nine (9) plots. Each plot measured 3 meters by 6 meters. The study was laid in a Randomized Complete Block Design (RCBD) with 3 treatments replicated 3 times. The experimental treatments were: T₁- Gulian Variety, T₂- Pulot Variety, and T₃- Ginampay Variety. The data were analyzed through the Analysis of Variance. The results of the study revealed that the 3 varieties have no significant difference in terms of plant height, the circumference of the stalk and an average number of leaves. Gulian and Ginampay were harvested at 162nd day while the Pulot was delayed in maturity and it was harvested at exactly 6 months or 184 days. Ginampay Variety produced the highest yield of 3,413 kilograms per hectare. Gulian, on the other hand, registered a yield of 2,631 kilograms per hectare. Pulot had the lowest production with only 1,796 kilograms per hectare. All of the varieties were suitable in the area. Ginampay was the most profitable and had the highest return on investment.

Keywords: Adlai (*Coix lacryma-jobi L.*), Varietal Performance

Introduction

Food shortages and starvation are among of the hotspot issues faced by our country today. Low production in both rice and corn is usually encountered by many farmers due to the reduction of production areas, incidence of pest and diseases, soil degradation in terms of fertility and acidity and climate change.

Since the supply of rice and corn in the Philippines is not enough to feed the growing population, alternative cereal for rice and corn must be considered. Adlai has been planted and used as staple food in other countries,

but here in the Philippines this crop remains unpopular and is taken for granted. This crop is believed to answer to the food insufficiency in the country. A reason why Adlai is introduced as an alternative to rice and corn (Sarmiento, 2012) and this is one of the main reasons also why the Bureau of Agricultural Research (BAR) is exploring the potentials of Adlai. The adaptability of the available varieties grown has been determined.

Adlai (*Coix lacryma-jobi L.*) as a food in lieu of the staple foods, the rice, and corn. Accordingly, Subanen farmers preferred Adlai because it tolerates in acidic soil and waterlogged area, resists pests and diseases and most of all produce a high yield in the highlands (dela Cruz, 2011). Adlai is at least 50 percent starch, 14 percent protein, and only 6 percent fat (Santos, 2012). One of the potential characteristics that make Adlai a good alternative to rice and corn is its highest food energy content which is three hundred fifty-six kilocalories (356 kcal) which are comparable to white and brown rice (BAR, 2010).

Objectives of the Study

1. To evaluate the agronomic characteristic of different varieties
2. To determine the yield of each variety.
3. To identify the insect pest and disease resistant variety
4. To identify early- maturing variety
5. To analyze the cost and return of each variety

Materials and Methods

The study was conducted at Barangay Caniangan, Tangub City for 6 months. The local seed varieties of Adlai, namely the Ginampay, Pulot and Gulian that were used in the study were procured from the Betinan Research Station (BRS) Betinan, San Miguel, Zamboanga Del Sur.

The experiment was laid out in a Randomized Complete Block Design (RCBD) with 3 treatments replicated 3 times. The treatments in this study were the 3 Adlai varieties such as; T₁ (Gulian), T₂ (Pulot), T₃ (Ginampay). The data, particularly the agronomic characteristics were gathered every 25 days.

The soil sample was analyzed in the Regional Soil Testing Laboratory of the Department of Agriculture, Regional Field Office, and Cagayan De

Oro City. The nutrients that were present in the soil were 90 (N), 40 (P), 20 (K) and the soil pH was 5.33.

The experimental area was plowed and harrowed thoroughly to pulverize the soil to allow proper aeration of oxygen. Prior to planting, the seeds were soaked in pure water for eight (8) hours and incubated in four (4) hours to soften the seed coat and to facilitate rapid germination. Furrows were spaced at 90 cm to allow the crop to produce more productive tillers. Two (2) seeds per hill were sown at a distance of 60 cm between hills. The basal organic fertilizer (animal manure) application was employed at the rate of 200g per hill before sowing the seeds. Two (2) weeks after planting, the excess plants were pulled out or removed to maintain spacing on most 2 plants per hill and to prevent too much competition.

The crop was harvested through cutting its branches and stems one (1) foot from the ground level, but the harvesting period was varied with the kind of variety. The grains were separated from the panicles by threshing or smashing. The grains were dried up to fourteen (14) percent moisture content.

Results and Discussion

Agronomic Characteristics of Adlai

Plant Height. Figure 1 shows the height of Adlai in 25, 50, 75, and 100 days after planting. Results revealed that Ginampay obtained the tallest height with 30.15cm in 25 days and 254.42 cm in a 100th day. On the other hand, Gulian and Pulot were shorter and relatively had the same height of 26.84 cm and 24.30 cm during the 25th day and 248.33 cm and 245.01 cm in the 100th day, respectively. However, the 3 varieties did not significantly differ from each other when the treatments were subjected to Analysis of Variance.

According to the Department of Agriculture, the height of mature Adlai varieties ranges from 250-300cm (cagayandeoro.da.gov.ph). Based on the result of this study, only Ginampay variety's height is within the range. Gulian and Pulot are shorter by more or less 10cm.

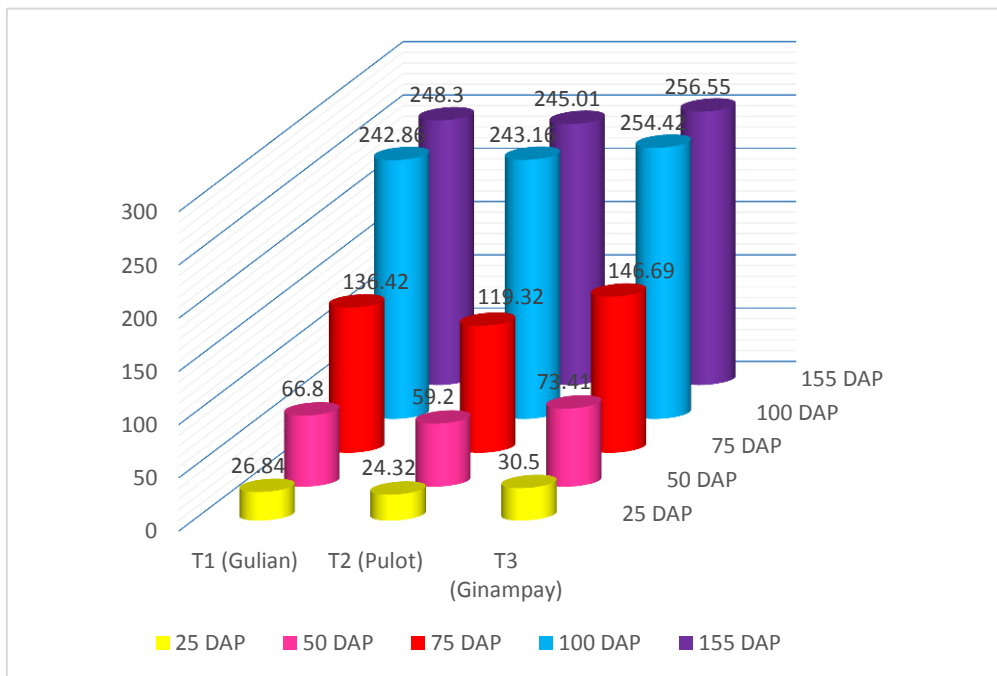


Figure 1. Average Plant Height of the Three Varieties (cm)

Stem Circumference. The circular size of the stalk of Adlai was also more or less the same with the 3 varieties and there was no significant difference when the treatment means were subjected to Analysis of Variance. Nevertheless, the Gulian variety obtained the highest circumference with a mean of 1.86cm during the 25th day and the lowest mean was observed at Ginampay variety with only 1.74 cm. However, during the 100th day of observation, Ginampay registered the highest circumference mean of 7.19 cm and Pulot was the lowest with 5.45 cm.

During its maturity, Pulot Variety obtained the highest circumference of 6.31, followed by Ginampay Variety with 6.29 cm. Gulian Variety had the lowest mean of 6.11cm in 155 days after planting.

Statistical analysis showed that in different periods, the 3 Adlai Varieties were found no significant difference with respect to the stem circumference.

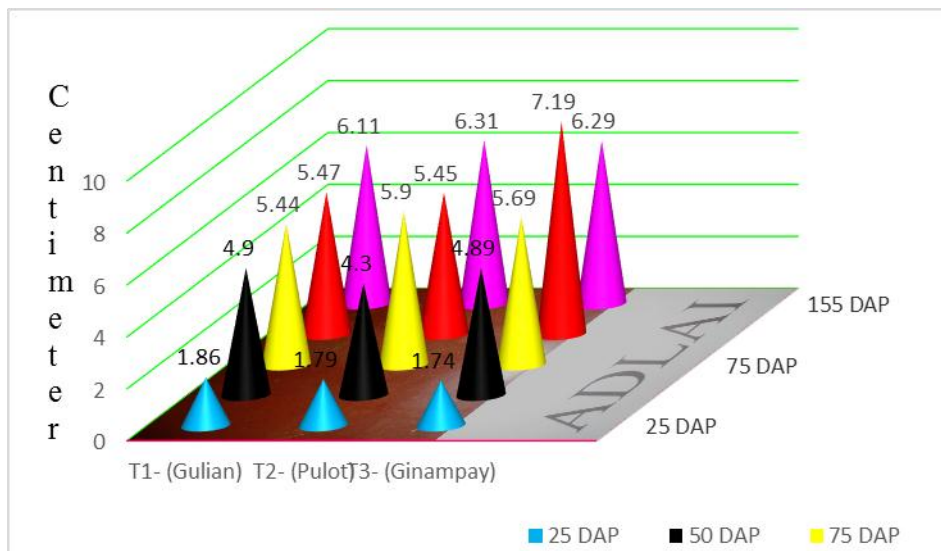


Figure 2. Average Circumference of stem of the three varieties (cm)

Number of Leaves. Results revealed that the 3 varieties had more or less the same number of leaves at an average of 13, 14 and 14 for Gulian, Pulot and Ginampay, respectively. As analyzed statistically, the findings revealed no significant difference among the treatments on the number of leaves.

Number of Tillers. The tillering performance of Adlai was varied. Among the 3 varieties, Pulot obtained the highest average number of 9 tillers while Gulian and Ginampay had produced only 7 and 5 tillers, respectively. Statistical analysis showed that there was a significant difference among the treatments. The Department of Agriculture found out that Adlai can produce 8-12 tillers. However, in this study, only Pulot had more or less the same number of tillers compared to the other geographical locations. The difference could be due to a distance of planting, climate and soil condition.

Percentage of Productive Tillers. As regards to the percentage of productive tillers, Ginampay variety was more productive because 98.75% of the tillers bore spikelets. Moreover, pulot obtained the highest number of tillers among the 3 varieties of Adlai but only 89.13 % of its tillers bore spikelets.

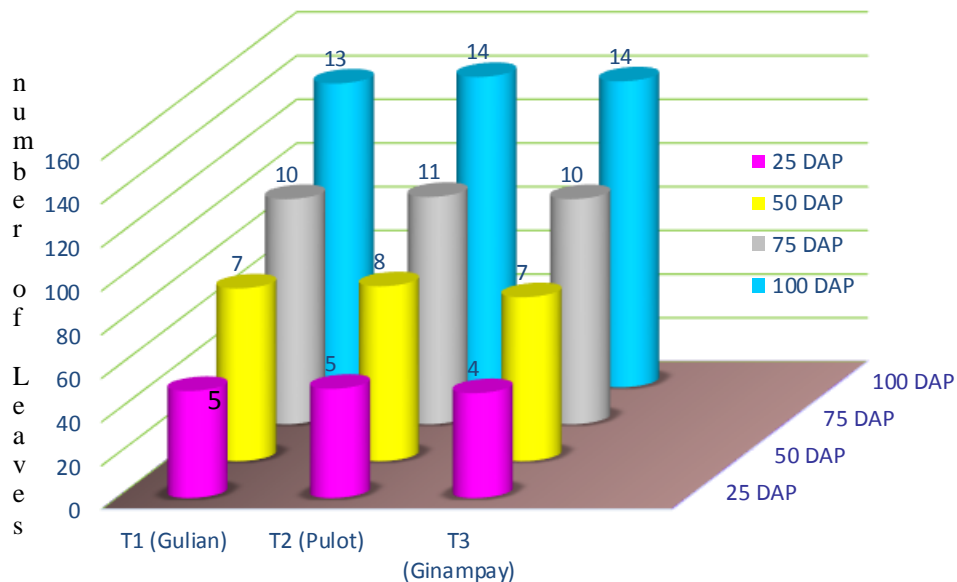


Figure 3. Average Number of Leaves of the Three Varieties (cm)

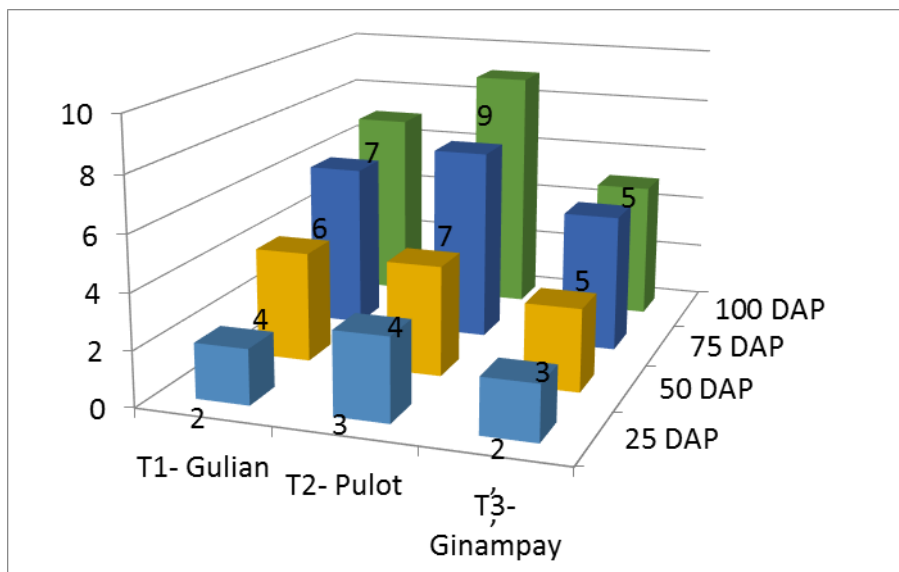


Figure 4. Average Number of Tillers of the Three Varieties (cm)

Filled and unfilled spikelet per panicle. Ginampay had produced the highest number of filled spikelets of 285. Gulian had 200 while Pulot had only 201

per plant. As analyzed statistically, it was found out that there was a significant difference among treatments.

On the other hand, among of the 3 varieties, Pulot was considered resistant to the infestation of pests and diseases since it obtained the lowest number of unfilled grains of 4 while Gulian and Ginampay varieties obtained an average of 18 and 13 unfilled grains, respectively.

During the vegetative stage of Adlai crop, several numbers of rice bug were present in the experimental site. Biologically, these insect pests would directly suck the milky grains of the crop, which eventually failed the spikelets to develop into grains. In effect, there were a lot of unfilled grains.

Days to harvest. Relative to maturity, both Gulian and Ginampay varieties were harvested earlier at 162nd day after planting as compared to Pulot which matured late and harvested at 184 days after planting.

Yield of Adlai per Hectare (kg)

The data showed that Ginampay variety had the highest production with 3,413.33 kilograms per hectare, followed by Gulian Variety with 2,631.11 kg and the lowest was observed in Pulot Variety with 1,795.56 kg (Table 2). However, no significant difference was found between the treatments.

The production per hectare of Gulian and Ginampay is within the standard range of production of the said crop in Bukidnon of 2000-4000 per hectare.

Table 1. Yield of Adlai perHectare (kgs)

| Treatment | Replications | | | Average Yield per hectare |
|---------------|--------------|----------|----------|---------------------------|
| | I | II | III | |
| T1 (Gulian) | 2,773.33 | 2,506.67 | 2,613.33 | 2,631.11 |
| T2 (Pulot) | 2,080 | 2,240 | 1,066.67 | 1,795.56 |
| T3 (Ginampay) | 3,040 | 3,466.67 | 3,733.33 | 3,413.33 |

Milling Recovery, Income per Hectare and ROI

Table 2 presents the milling recovery, income and return on investment of venturing into Adlai production. The results revealed that the highest producer variety was Ginampay but its milling recovery was only 47%. Pulot as the lowest producer of grains had the highest milling recovery of almost 60%. The results confirmed the findings of the study conducted in Bukidnon where the milling recovery of Adlai was 60%.

As regards to the Return on Investment, all the 3 varieties reached from 77 to 136%. This indicates that Adlai production is profitable that when a farmer invests a peso in this agribusiness, he would have a return of P1.16, P0.77, and P1.36 for Gulian, Pulot and Ginampay, respectively.

Table 2. Milling Recovery, Income, and ROI

| Treatment | Yield kg/ha | Adlai Grits kg/ha | Millin g Recov ery (%) | Gross Income (grits, kg x P40/kg). | Net Income | ROI |
|-----------|----------------|-------------------------|------------------------------------|--|---------------|------|
| Gulian | 2,631.11 | 1,380 | 52.44 | 55,200 | 29,638 | 1.16 |
| Pulot | 1,795.56 | 1,058.84 | 58.97 | 42,353.60 | 18,462.40 | 0.77 |
| Ginampay | 3,413.33 | 1,604.27 | 47.00 | 64,170.80 | 37,043.80 | 1.36 |

Conclusion

Ginampay variety of Adlai is suitable in Tangub City as manifested by comparable yield with those planted in other locations in Mindanao. Gulian and Ginampay are early maturing varieties. Due to its high return on investments, farmers would be encouraged to produce this kind of cereal as a close substitute for rice and corn. Awareness on the usage of the product may be given preferential attention to the farmers.

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