

PERFORMANCE EVALUATION OF FIVE VARIETIES OF CABBAGE (*Brassica oleracea*, Linn.) UNDER MSU CONDITIONS

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Cabbage (*Brassica oleracea*, Linn.) is an annual crop belonging to the Mustard or Crucifers family. It thrives best on relatively cool areas (15°C - 18°C) with evenly distributed rainfall during its vegetative growth (UPCA, 1970). In the Philippines, this crop is widely grown in elevated areas like Baguio because of the place's relatively cooler temperature. In 1975, cabbage ranked fifth in production among vegetables with a total production of 53,008.2 metric tons (Bautista and Mabena, 1977). This crop is highly valued in the market because of its high nutritive value.

With the advent of modern technology in vegetable production, the importance of variety selection become increasingly high. Many varieties were developed which were claimed to be highly productive if given the required environment. In many parts of the Philippines, researches on yield and growth performance of cabbage varieties also correspondingly increased. Acosta et. al. (1967) reported a comparative study of different cabbage varieties grown in two locations and it was found out that the yield and growth performance of cabbage varies from place to place. Maturity, weight and compactness of head, weight and size of the wrapper leaves are among the data that were collected and showed variation among varieties.

Authors of agricultural books have conflicting reports as to what cabbage variety will give the best growth performance and

highest yield. Acosta, et. al. (1967) reported that Copenhagen Market gave a higher yield compared to Enkhuizen Glory, but Thompson and Kelly (1957) claimed that Enkhuizen Glory gave a significantly higher yield than Copenhagen Market. PCARR (1975) and Bautista, et. al. (1977), on the other hand, recommended two new varieties which they called high-yielding and heat-tolerant varieties. These are the KY F 1 cross and the KK F 1 cross from Japan.

It becomes necessary, therefore, to test the yield and growth performance of the available cabbage varieties in our market today before going to a largescale cabbage production in a particular place.

Materials and Methods

The field experiment was conducted at the College of Agriculture Experimental area, Mindanao State University campus, Marawi City from June 11, 1980 to September 8, 1980. The experimental area is of clay-loam soil with good drainage. The experiment was laid out in randomized complete block design employing five treatments replicated three times in the form of blocks. Each block contained 100 plants consisting of five varieties. Each variety was assigned to one furrow or row. The plants were spaced 40 cm. apart by 100 cm. between furrow or row. Each block measured 5 meters by 8 meters (40 sq. meters). The total land area covered by the experiment was 130 sq. meters. The data were collected at maturity and analyzed statistically.

All the five varieties were given uniform cultural management specifically in land preparation, planting, spacing, cultivation and weeding, fertilization, irrigation and pests and diseases-control.

The data were then collected at maturity or when 75 per cent of the total plant population per treatment was already firm and compact. The data collected were head-weight of cabbage, weight of wrapper leaves, number of wrapper leaves per plant, number of days of maturity and disease rating.

Results and Discussion

The results of the experiment were summarized in Tables 1, 2 and 3.

The highest yield of 0.77 kg per head was obtained from variety KY F 1 cross, followed by KK F 1 cross and Enkhuizen Glory. No significant difference, however, was observed among the three. These varieties showed high tolerance to heat on sunny days during their vegetative growth stage. They grow relatively vigorous and responsive to fertilizer application resulting to bigger and heavier but relatively less compact heads.

On the other hand, Copenhagen Market and Marion Market were very sensitive to heat. Even with a sunshine duration of 4 hours, they easily wilted but recovered late in the afternoon. They formed smaller but compact heads and smaller wrapper leaves as a result of the relatively poor vegetative growth.

As to maturity, all the tried varieties matured at the same time (80 days) except Marion Market which matured 7 days later.

Among the five varieties, only Copenhagen Market produced the significantly lower number of non-wrapper leaves.

There were only three kinds of diseases that attacked the studied plants, the head-rot, leaf spot and bacterial soft rot. Among these three, only the leaf spot attacked significantly the studied plants and only Marion Market was considered susceptible to leaf spot with 100 per cent damage rating.

Conclusion

With all factors considered, KY F 1 cross, KK F 1 cross and Enkhuizen Glory were highly recommended for growing under MSU conditions.

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Table 1. Yield, head weight and number of days of maturity of cabbage.^{a/}

Treatments	Yield		Number days of maturity
	ton/ha	kg/plant	
KY F 1 cross	19.25 ^{b/c}	0.77 ^{b/c}	80
KK F 1 cross	18.75 ^{b/c}	0.75 ^{b/bc}	80
Enkhuizen Glory	18.00 ^{b/bc}	0.72 ^{b/bc}	80
Copenhagen Market	8.75 ^{a/ab}	0.35 ^{a/ab}	80
Marion Market	8.00 ^{a/a}	0.24 ^{a/a}	87
Mean	13.02	0.566	81
C. V. (%)	27.4	27.4	
L.S.D. (0.05)	7.3	0.29	
(0.01)	10.6	0.49	

^{a/} Within column, means with uncommon letters are significantly different from each other at 5 per cent (numerator) and 1 per cent (denominator) probability level using L.S.D. method.

Table 2. Weight of wrapper leaves, number of wrapper leaves per plant and number non-wrapper leaves per plant.^{a/}

Treatments	Weight of wrapper leaves, per plants (kg) ^{b/}	Number of wrapper leaves / plants	Number of non-wrapper leaves per plant
KY F 1 cross	0.55	12.6 ^{b/ab}	31.93 ^{c/b}
KK F 1 cross	0.44	10.3 ^{a/a}	35.00 ^{d/c}
Enkhuizen Glory	0.43	11.9 ^{ab/a}	34.13 ^{cd/c}
Copenhagen Market	0.40	12.8 ^{b/ab}	26.43 ^{a/ac}
Marion Market	0.44	15.4 ^{c/b}	30.14 ^{bc/b}
Mean	0.45	12.6	31.52
C.V. (%)		9.4	4.2
L.S.D. (0.05)		2.2	2.46
(0.01)		3.23	3.59

^{a/} Within column, means with uncommon letters are significantly different from each other at 5 per cent (numerator) and 1 per cent (denominator) probability level using L.S.D. method.

^{b/} Not significant at 5 per cent probability level.

Table 3. Leaf spot, bacterial soft rot and head rot ratings in cabbage,^{a/}

Treatments	Leaf spot damage, rating	Bacterial soft rot damage rating ^b	Head rot damage rating ^b
KY F i cross	0.0 ^{a/b}	5.0	0.0
KK F 1 cross	0.0 ^{a/a}	3.3	0.0
Enkhuizen Glory	8.3 ^{a/a}	3.3	5.0
Copenhagen Market	5.0 ^{a/a}	5.0	1.6
Marion Market	100.0 ^{b/b}	5.0	0.0
Mean	22.66	4.332	1.332
C.V. (%)	25.3		
L.S.D. (0.05)	10.68		
(0.01)	15.54		

^{a/} Within column, means with uncommon letters are significantly different from each other at 5 per cent (numerator) and 1 per cent (denominator) probability level using L.S.D. method.

^{b/} Not significant at 5 per cent probability level.

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