

# FRESH CALYSES AS HEALTH DRINK FROM ROSELLE CULTIVATION IN POLYBAGS UTILIZING OPEN SPACES AT HOME

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## ABSTRACT

Roselle when fruiting, look beautiful and gorgeous as its sheath called red calyces, more impressed as interest, because the shape and structure are cupped upward covering the fruit pods. Herbaceous stems are also red contrasts with the leaves green. Roselle now commonly planted as an ornamental plant around the houses to take advantage of existing open space by grown in the ground or planted in pots. The beauty of this herb is increasingly prominent, if planted densely to form colonies. Besides beauty derived from Roselle cultivation around the houses also serves as a provider of fresh calyces to make health drinks that taste sour, which comes from a sense of itself calyces. As the risk of crop cultivation around the home stay is like plants shaded by something then can not get full sunlight during the day, but this plant requires full exposure though Roselle is a short day plant. To determine the intensity of sunlight resistance and also the suitability of the amount of growth media for growing as houseplants, then held a Roselle cultivation experiments which were grown in a variety of sizes polybag, and also shade with shading net from various levels of the percentage inhibition of light. At the end of the experiment the result was that Roselle in its growth requires a great growing medium and gets full sun exposure.

**Key words:** Roselle cultivation, fresh calyces, health drinks, ornamental plants

## INTRODUCTION

Roselle (*Hibiscus sabdariffa* Linn) is a herbaceous plant which its estimated come from East India which then spread widely to the tropics and sub-tropics including Indonesia. The plant has two varieties with different cultivation purposes, namely first *Hibiscus sabdariffa* var. *altissima* is Roselle with yellow calyces which has been developed to take the trunk fiber as raw material for pulp and burlap sacks. The second is *Hibiscus sabdariffa* var. *sabdariffa* is Roselle with red calyces, now cultivated for its calyces taken as a useful raw material for drinks human health.

Roselle plant var. *altissima* can reach a height of 3-5 meters, bear most of the year, while var. *sabdariffa* plant height does not exceed two meters and the figure of the plant is a shrub. Rosella fruit var. *sabdariffa* looks very attractive because of the bright red calyces, some are even dark red. In Indonesia, Roselle plant has been known since 1922 that Roselle has flourished along the path of a train in Indramayu, West Java.

After many years known as a wild plant which was ignored, now the plant is known to many properties that are beneficial to humans from its calyces, so much cultivated again as an ornamental plant was carried around the home stay.

Calyces known to contain a variety of elements in each 100 g fresh weight, water as much as 86.2%; 44 cal calories; 285 IU of beta carotene; 11.1 g carbohydrates, 2.5 g fiber, 1.6 g protein, 1.0 g ash, 0.1 g fat; 160 mg calcium, 60 mg phosphorus, 14 mg of vitamin C; 3.8 mg iron, 0.5 mg niacin, 0.6 mg of riboflavin; 0.04 mg thiamine. That is adequate nutrition to meet the needs in maintaining body fitness.

As a consequence of the cultivation of plants around the home stay is limited space to grow and the shade was not intentional, so the intensity of sunlight is blocked which is required by the plant. So to find out due to the limitations it is necessary to investigate the inhibitory effect of light intensity and the magnitude of the planting medium on growth and yield of Roselle.

## RESEARCH METHODS

To conduct research on the effect of the inhibition of light intensity and magnitude of growth media on the growth and fruits yield of Roselle plant prepared in the form of equipment, poly-bag, shading net, Roselle seeds, garden soil as a growing medium, and farming equipment in a pot that includes a small shovel soil, watering buckets, plant scissors, space around the house and or an open yard to put plants poly-bag.

The research took place in Kledung, Kradenan village, sub-district Banyu Urip, Purworedjo district, Central Java province, Indonesia from April to July. High research site is 18 m above sea level. To conduct the study, the experiment was prepared with the split-plot experimental design with the main plot as the intensity of sunlight that consists of three levels namely 100% of sunlight intensity ( $I_0$ ); 55% of sunlight intensity ( $I_1$ ) and the intensity of 25% sunlight ( $I_2$ ). The sub-plot is the magnitude of the poly-bag which also consists of three levels, namely poly bag size (30x50) cm ( $K_1$ ), poly-bag size (40x50) cm ( $K_2$ ), poly-bag size (50x50) cm ( $K_3$ ), which in turn, each sub-plot repeated three times so overall there are 27 sub-plot experiments. Each sub-plot consisted of 6 trials poly-bag plants.

To prepare for the experiment, the yard is divided into three equal parts wide to serve as the main plot. One part to get full sunlight, while the other two sections on above at 3 meter high mounted shade of shading net for blocking sunlight by 45% and 75%. Above each main plot of land then placed three kinds of size poly-bag plants as sub-plots which each represented by six kinds poly-bag plants.

## DISCUSSION

In this experiment, the first observations at what age roselle plants start flowering and number of fruits per plant were produced, after the plant reaches the age of three months. From the observation, the age of roselle plant starts flowering was very influenced by the intensity of sunlight and the amount of growing media materials in polybag as shown in the following table.

Table.1: Age roselle plants start flowering (days)

Treatments	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	Averages
I <sub>0</sub>	51.90	51.00	50.80	51.20 b
I <sub>1</sub>	52.30	52.20	51.70	52.10 ab
I <sub>2</sub>	53.40	52.70	52.80	52.90 a
Averages	52.50 p	51.90 pq	51.70 q	74.30 (-)

Note: The value of the average rate on the inter-column, and or between rows, which are given the same letter indicates no significant difference based on Duncan's Multiple Range Test. Sign (+ / -) indicates the interaction real / unreal between treatments.

From Table.1 it can be seen that the intensity of the sun's rays 100%, showing the average age begin flowering, shorter than the other solar radiation which is less than 100%. Similarly, from a large polybag, showing the average age begin flowering shorter than the others, which is smaller polybag.

In the calculation of roselle fruit production, as a continuation of flower production, showed the results were worth it, which is influenced by the intensity of sunlight and the large volume of polybag as shown in the following table.

Table.2: Number of fruits per plant

Treatments	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	Averages
I <sub>0</sub>	16.30 b	19.10 ab	20.40 a	18.60
I <sub>1</sub>	6.00 c	7.10 c	6.10 c	6.40
I <sub>2</sub>	6.10 c	4.80 c	5.00 c	5.30
Averages	9.50	10.30	10.50	10.10 (+)

Note: The value of the average rate on the inter-column, and or between rows, which are given the same letter indicates no significant difference based on Duncan's Multiple Range Test. Sign (+ / -) indicates the interaction real / unreal between treatments.

From Table.2 it can be seen that the roselle plant, which gets sunlight intensity 100%, showing the average number of fruits per plant more than the plants that received solar radiation that are less than 100%. Similarly, plants in large polybag, showing the average number of fruits per plant more than plants with smaller volume polybag.

## CONCLUSION

This experiment conducted in the period from April to July in Java which belonged to the southern hemisphere; in this period coincides with the dry season wherein the position of the sun shifts of 0 degrees latitude of the equator on March 21, towards 23.5 degrees northern latitudes reached on June 21, and then shifted back to the equator on September 21. It was also shown that the area south of the equator are experiencing short periods of sun exposure. Roselle in this study, flowering, which later became the fruit; since roselle are short day plants are having an appropriate situation. From observations began flowering plant age, and the amount of fruit produced per plant, showed good results are the plants get full sun intensity with most growing media. Therefore, if the roselle used as ornamental plants at around homes and to get a lot of calyces, well if planted in a position to get full sunlight all day. As for the nutrient needs can be done with intensive fertilization with organic fertilizers.

## AKNOWLEDGEMENT

Our thanks gift to Yanita Prihantari as a researcher, in which the results of her experiments we were use as the data base of this paper. At the time of the experiment, the researchers still a student in order to achieve a bachelor's degree in agricultural science.

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