

The Assessment On Cassava Varieties Of Kasesart And Litbang UK II By The Application Of Organic Fertilizer In 2015

Ngatinem, M.C. Tri Atmodjo, Rina Apriyanti , Agus Himawan

Abstract: The Continuous land cultivation of cassava will decrease soil quality. One way to improve soil quality is to add organic fertilizer to the soil. This assessment was carried out at the Starch Technology Center in Sulusuban Lampung. Organic fertilizer used is Golden Delima Plus with dose 5 ton per hectare and varieties used are Kasesart and R & D UK II. From the results of the assessment obtained the following results: 1. Vegetative growth of plants that received organic fertilizer treatment better than without the treatment of organic fertilizers. 2. The highest yield of crop production on Kasesart varieties is in the treatment of spread above the ridge, whereas in the R & D varieties of UK II, the dispersion treatment in the trench showed the highest yield. 3. The age of plant for harvesting time greatly influence the production of crops.

Key Words: Assessment, Cassava, influence, Kasesart, Organic fertilizer, Tube, Vegetative growth,

1 INTRODUCTION

The cassava is one of industrial raw materials which is increasing needed continuously every year. This condition because of cassava is the main ingredient in the manufacture of various industrial products. This increase in demand has not been matched by the availability of raw materials. Various efforts are made to increase the productivity of cassava plants, among others, by improving the level of soil fertility and the use of superior seeds. Some varieties of cassava that have high yield potential are R & D II and Kasesart. The cassava plant of R & D varieties UK II is a superior varieties of cassava that has been successfully assembled by researchers of IAARD in Balitkabi. The R & D UK II is an open cross breed of MLG 10.006 female elder. The average tuber yield of R & D of UK II reached 42.2 ton / ha, even at optimal condition of R & D of UK II able to produce 60,4 ton per hectare fresh tuber. This cassava can be harvested at the age of 9-10 months. Another characteristic of this unbranched variety is its HCN content of 31 ppm wet basis. Another advantage that is owned by varieties released by the Minister of Agriculture in 2012 is its resistance to pest disease. UK II R & D is somewhat resistant to mite attacks. In addition, this variety is somewhat resistant to root rot disease / tuber (*Fusarium* spp). The other superior varieties are kasesart. This variety was released in 2000, an introduction of Thailand. The potential yield of this variety ranges from 25 to 38 tons / ha of fresh tube. Plant height can reached more than 2.5 meters. The physical characteristics of the varieties of kasesart are leaf shape, brown leaf color, yellowish green petiole color, silver green skin color, yellow inner stem color, white tuber, yellowish whitish skin color, with short tuber stem size and crown type more than 1 meter, tuber shape grips and bitter taste. Kasesart varieties can be harvested at 9-10 months with starch content ranging from 19 to 30%, it has 60.06% moisture content, ash content of 0.11%, and 0.07% fiber content. The benefits of this plant is somewhat resistant to CBB (Cassava Bacterial Blight). Continuous land cultivation of cassava will decrease soil quality. This condition because of the cassava plant is a nutrient plant nutrient elements. One way to improve soil fertility is to add organic fertilizer to the planting area. Organic fertilizer is a collective name for all types of organic material from plants and animals that can be converted into nutrients available to plants. In Permentan No. 2 / Pert / Hk.060 / 2/2006 on organic fertilizers and soil enhancers. Organic

fertilizers are fertilizers that are mostly or wholly composed of organic materials derived from animals or plants that have been through the process of engineering, can be solid or liquid form that can supply organic materials so as to improve the physical, chemical, and biological properties of the soil. From the above definition of organic fertilizer is more focused on the content of C-organic or organic material than the content of soil fertility. The organic fertilizer is distinguishes from inorganic fertilizers. If the value of C-organic is low and not included in organic fertilizer classification then classified into organic soil regenerator. In the market many types and trademarks of organic fertilizer, one of which is fertilizer Golden Delima Plus. The composition of the organic fertilizer consists of N 1 - 2%, P₂O₅ 1 - 2%, K₂O 2-4%, organic C 25-35%, pH 7 - 8%, and water content 15-20%, and contains humic acid and microbes. In this study the fertilizer to be applied is golden pomegranate fertilizer with several ways of applying it. The Objective of this study was to compare the effect of organic fertilizer Golden Delima Plus with various ways of application to the growth and productivity of cassava varieties Kasesart and Litbang UK II.

2. METODE

The activity was carried out in experimental garden of Starch Technology Center. Cassava cultivation begins in December 2013 until September 2014. Varieties used are Kasesart and R & D UK-2. Both varieties are planted on two different blocks. Each variety has 3 treatments and 1 control. The treatments include the application of Golden Delima with uniform stocking, stocking over the bunds, and stocking in the trenches. Pomegranate golden fertilizer applied for each treatment as much as 5 tons / ha. Chemical fertilizers used with dose for the first fertilization of urea 150 kg / ha, SP-36 100 kg / ha, KCl 100 Kg / ha, while the second fertilization with urea dose 100 kg / ha, SP-36 50 kg / ha, and KCl 50 kg / ha. The first fertilization is done 1 month after planting, and second fertilization done 3 months after planting. Weed control is done by using herbicides. Measurement of vegetative is done from plant age 3 months until harvest. Vegetation measurements include plant height and stem diameter, while observation of starch content is 7 months to harvest. In addition, to know the quality of crop yields are also measured tubers, tuber weight, tuber length and tuber diameter.

3.Result and Discussion

The Growth and development of cassava, is a factor that affects the productivity of the end of the plant. The better the growth begins, then the big hope to obtain optimal results. Here are the results of vegetative observation of cassava with fertilizer application treatment of golden pomegranate plus. Vegetation measurements at plant height were carried from the base of the stem to the end of the leaf. The following figure of the graph shows the results of plant height measurements.

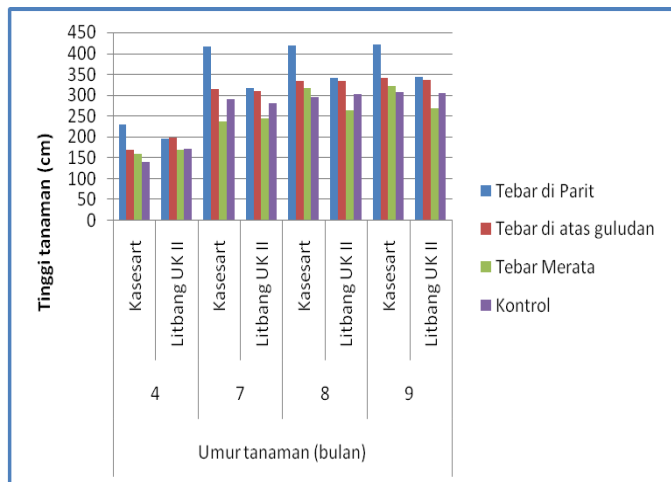


Fig 1. Plant height (mm)

From the graph above in fig 1. shows the varieties of kasesart plants higher than the varieties of R & D UK II. In the treatment for both varieties of application by means of spread in the trenches showed a higher yield than other treatments. Vegetative growth will determine the productivity of the plant. In addition to the height of the plant, also carried out measurements on the diameter of the stem. If the cultivated plants obtain good nutrition then the plant growth will be good, including the diameter of the stem. In Kasesart and Litbang UK II varieties the diameter of the stem does not show any significant difference. Cassava varieties for the dispersion treatment in the trenches indicate the larger diameter of the rods of the other treatments, while in the R & D varieties of the UK II treatment the stocking in the ridges the diameter of the stem is larger than the other treatments. The following graph of stem diameter Kasesart and R & D varieties UK II:

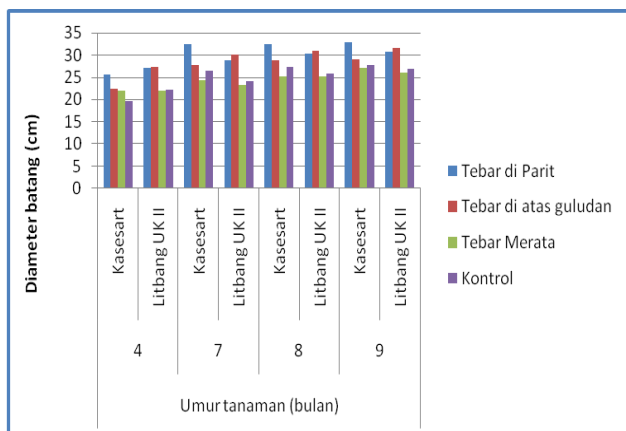


Fig 2, The Stem Diameter (cm)

The part used in cassava is the bulb. Therefore the quality of cassava is seen from the number of tubers, tuber weight, tuber length, and tuber diameter. If all components are good then the productivity of the plant will be good. The following data from the measurement results of these components. Measurements are made when the crop is harvested. Here is a chart that holds the number of crops.

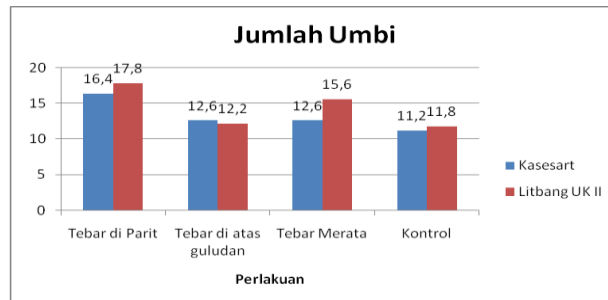


Fig 3. The Number of tuber

Number of tubers per plant varieties of R & D UK II more than Kasesart varieties. This will affect crop production. In both varieties of kasesart and R & D UK II the dispersion treatment in the trenches showed the best results. In addition to the number of tuber other factors that affect the production of crops is the weight of tubers. R & D varieties of UK II plant bulbs heavier than Kasesart varieties. Tuber weight showed different result from both varieties, the R & D of UK II control showed better result whereas in Kasesart variety of Treatment of Tebar evenly showed the best result.

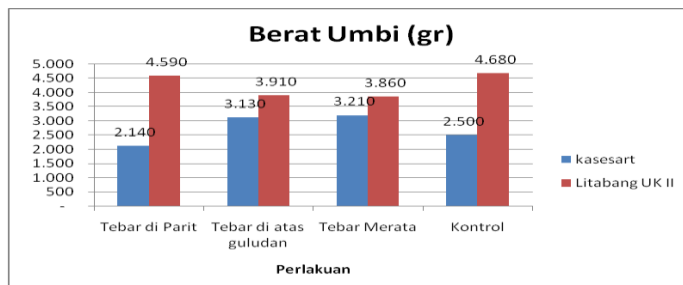


Fig. 4. Weight Fresh cassava tube

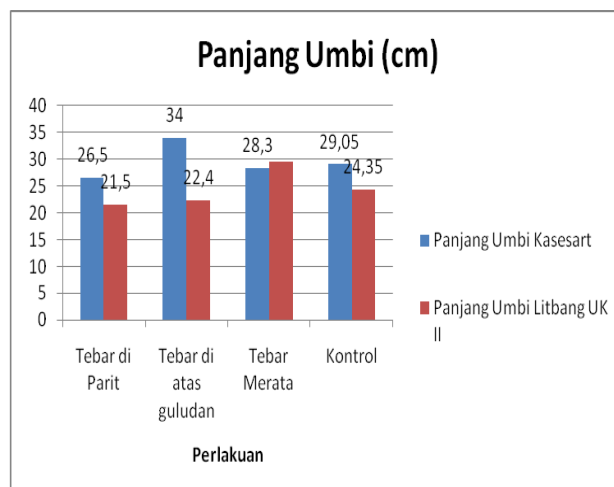


Fig. 5. Long of cassava tube

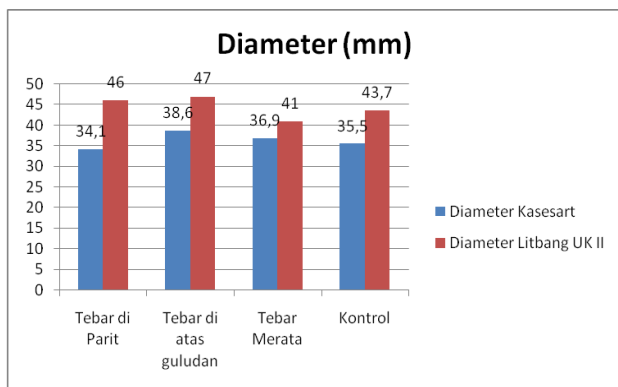


Fig. 6. Diameter of cassava Tube

Cassava Tube length kasesart varieties longer than the varieties of R & D UK II, while the diameter of tube varieties R & D UK II larger than Kasesart varieties. The following table 1. presents data on the production of varieties of Kasesart and Litbang UK II.

Table 1. The fresh tube production of Kasesart and Litbang UK II.

No	Treatment	Production of fresh tube (Kg)	
		Kasesart	Litbang UK II
1	Spread in trench	20,000	48,980
2	Spread above the ridge	35,020	47,660
3	Spread homogenously	29,760	44,560
4	Control	33,740	47,860

From the table 1. above the R & D varieties of UK II on the treatment of spread in the trench the best results among other treatments. Varieties of Litbang UK II are harvested at 12 months of age so that the results are better than Kasesart varieties that are harvested at 9 months of age. In the treatment varieties spread above the ridge showed the best results. The condition of the planting area is one of the factors causing the diversity of crop production. According to Dwijoyoseputro (1980), C / N deficiency in plants even in the early stages will decrease yield. Different soil fertility conditions result in different production. The following graph presents the data of crop production of the treatment respectively

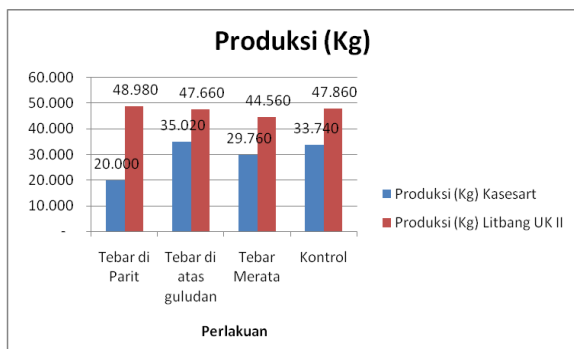


Fig. 7. Crop production of tuber (kg)

Cassava is much in demand by the industry, especially tapioca factory which contains high starch content. Kasesart varieties have a greater starch content than R & D varieties II. Quality standard according to (KMP, 2000) value of cassava starch varieties Kasesart varieties of at least 19%. In the Kasesart varieties aged 9 months the average value of starch content is 22.17%, while the value of starch varieties of R & D UK II is 18.16%. The content of starch is strongly influenced by genetic factors, growing conditions and age of plants. From the measurement results of each treatment the value of starch content for each variety shows a value that is not too striking difference as presented in figure 8.

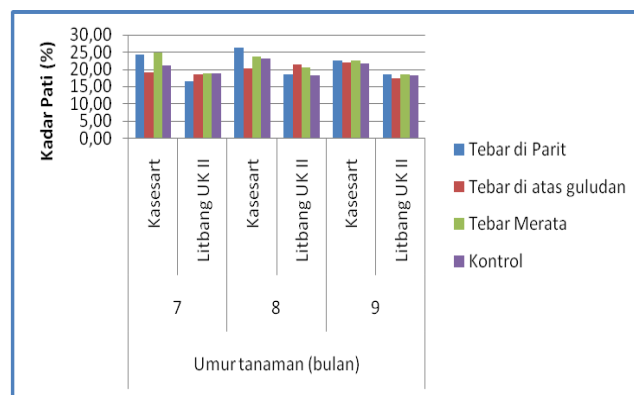


Fig. 8. The Starch Content of cassava varieties Kasesart and Libang UK II from 7 to 9 months:

The data of. The Starch Content of cassava varieties Kasesart and Libang UK II from 7 to 9 months presented in Table 2.

Table 2. The Starch Content of cassava varieties Kasesart and Libang UK II from 7 to 9 months old respectively

No	Treatment	Plant age (month)					
		7		8		9	
		Kasesart	Litbang UK II	Kasesart	Litbang UK II	Kasesart	Litbang UK II
1	Spread in trench	24.38	16.69	26.35	18.56	22.45	18.5
2	Spread above ridge	19.15	18.70	20.32	21.41	22.08	17.47
3	Spread homogenously	24.74	18.79	23.67	20.69	22.45	18.5
4	Control	21.27	18.80	23.22	18.34	21.71	18.16

4. Conclusion

From the results of study of cassava using organic fertilizer golden delima plus obtained the following conclusions:

1. Vegetative growth of plants treated with organic fertilizers is better than without treatment.
2. The highest yield of crop production on kasesart varieties is on the treatment spread above the ridge, while in the R & D varieties of UK II, the dispersion in the trench shows the highest yield.
3. The Age of cassava plants for harvesting time greatly influence the production of plant.

Reference

- [1]. Deskripsi Varietas Unggul Ubikayu 1978 – 2001. Balai Penelitian Kacang-kacangan dan Umbi-umbian Malang.
- [2]. Deskripsi varietas Litbang UK -2 .Badan Penelitian dan Pengembangan Pertanian. Kementerian Pertanian Republik Indonesia.
- [3]. Dwijoseputro, D. 1980. Pengantar Fisiologi Tumbuhan. PT. Gramedia. Jakarta.
- [4]. Maulana, Puri. Pupuk Organik dan Hayati : Pengertian, Sumber, Bahan, Sejarah, Penggunaan, Manfaat, Peranan, dan Lingkungan. Perpustakaancyber.blogspot.com. Diakses tanggal 31 Oktober 2013.
- [5]. Susilawati et. al. Karakteristik Sifat Fisik dan Kimia Ubi Kayu (Manihot esculenta) Berdasarkan Lokasi Penanaman dan Umur Panen Berbeda Jurnal Teknologi Industri dan Hasil Pertanian Volume 13, No. 2, September 2008