



# Effect of Spacing on Growth and Yield of Sangga Sembalun Garlic Variety of Sembalun Highland, West Lombok



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## ABSTRACT

This study was carried out to determine the effect of plant spacing on growth and yield of local garlic (*Allium sativum sativum*) variety named Sangga Sembalun from Sembalun Highland of West Lombok District, Indonesia. The results showed that there was no significant difference on effect of spacing on plant height, number of leaves, fresh weight, dry weight, moisture content, bulb weight, bulb size (length and diameter), cloves number, and cloves weight. However, plot yield of T3 (4.84 kg/m<sup>2</sup>) was higher than T2 (3.71 kg/m<sup>2</sup>) and T1 (3.77 kg/m<sup>2</sup>) due to significant increase in population which was, in average, 153, 107, and 90 plant per m<sup>2</sup> for T3, T2, and T1 respectively. Moreover, weight lost from fresh to dry yield was lower in T3 (55.32%) than T1 (58.13%). Weight lost in T3 was consistently the lowest at 4.35% after six months storage to produce seed bulb.

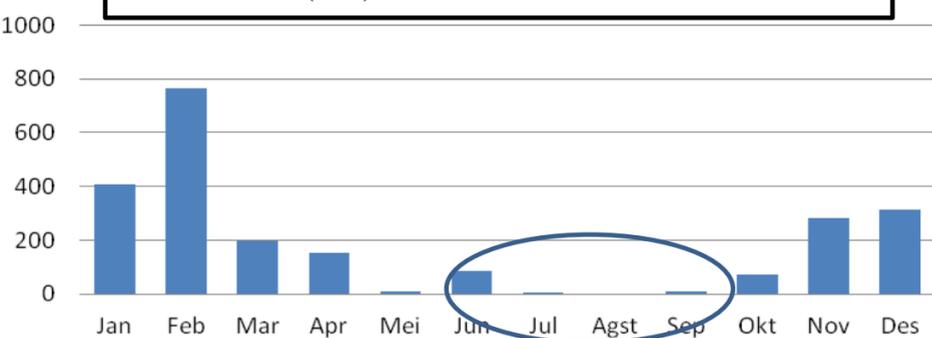
## Introduction

In 2017, demand of garlic reached 475.750 tons while national production was 41.750 tons. Indonesia needs 72.249 ha of area to produce 603.000 tons of garlic. Nusa Tenggara Barat (NTB) province is one of potential area for garlic development that cover 1.162 ha area in Lombok Island and 4.443 ha area in Sumbawa Island. NTB also has local garlic varieties named Sangga Sembalun with average productivity at 9-10 t/ha.

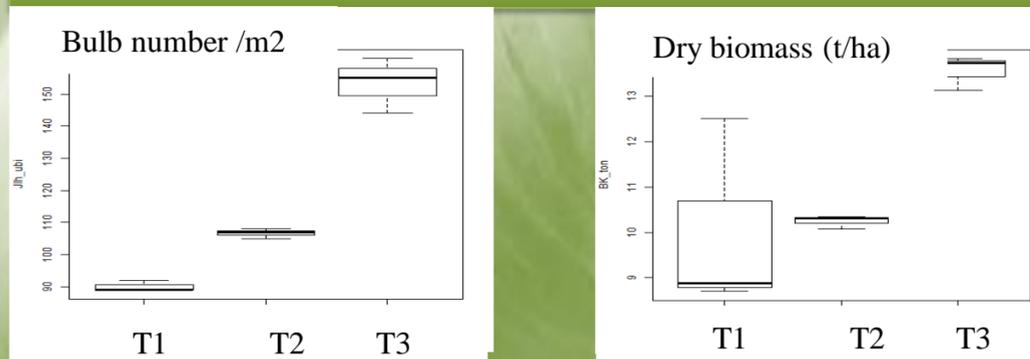
## Material and Method

On-farm experiment conducted at Sembalun Bumbung Village, Sembalun - East Lombok District of NTB Povinve, Indonesia (S -8°22'47" x E 116°32'19" at 1.182,9 meter above sea level) during dry season from June 2018 to March 2019. The experiment was laid out in Randomized Complete Block Design (RCBD) for three plant spacing treatments; 12 cm x 12 cm (T1), 12 cm x 10 cm (T2), and 10 cm x 10 cm (T3) with nine replication in 1m x 10m plot size for each.

Rainfall (mm) of Sembalun Sub-district in 2018



## Results and Discussion



Parameter	Spacing			CV (%)
	T1	T2	T3	
Bulb number in m <sup>2</sup>	90.00 c	106.7 b	153.3 a	4.48
Average fresh weight in m <sup>2</sup> (g/plant)	41.95 a	34.75 b	31.63 B	6.35
Fresh biomass(kg/m <sup>2</sup> )	3.77 b	3.71 b	4.84 a	4.11
Dry biomass (kg/m <sup>2</sup> )	1.67 b	1.71 b	2.26 a	10.50
Weight lost from fresh to dry biomass (%)	58.13	56.30	55.32	6.28
Bulb seed (kg/m <sup>2</sup> )	1.59 b	1.62 b	2.16 a	10.82
Weight lost six months (%)	4.91	5.19	4.35	13.01
Plant height cm)	58.58	56.33	54.08	10.15
Leaf number plant <sup>-1</sup>	11.83	11.67	10.83	16.40
Fresh leaf (%)	66.19 a	48.59 b	63.07 ab	16.09
Bulb biomass ratio (%)	86.74	84.71	87.57	6.19
Bulb diamter(mm)	15.70	13.74	12.66	32.71
Bulb height (mm)	13.99	10.87	10.70	37.40
Cloves number	14.33	11.17	17.67	38.90
Cloves weight (g)	0.90	1.33	0.80	49.45

## Conclusion

Garlic productivity was significantly increased following the increase of plant density from 10.03 t/ha in 12x12 cm spacing to 13.57 t/ha in 8x8 cm spacing. Although bulb size was getting smaller, there was no significant different on growth and yield parametres, except percentage of fresh leaf and fresh biomass.

Thank you

