

## **IMPACT OF INTRODUCED CASSAVA VARIETY AND CROOPING SYSTEM ON FARMERS' INCOME AT SIKKA, EAST NUSA TENGGARA**

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### **INTRODUCTION**

In Sikka district of East Nusa Tenggara province, cassava is second important main diets, especially for rural people. Cassava is found extensively in East Nusa Tenggara, and usually planted in between maize as their main food crops. They afraid that planting cassava could decrease maize yield, therefore they plant cassava in wider spacing (4.0 x 2.0 m or 4 x 1.0 m) With this practice, the cassava yield is very low (4.0 to 7.0 t/ha). During FGD conducted in 2016 and house hold survey in 2017, it was observed most farmers plant a low yield local variety with no fertilizer application. This practice would also responsible for the low yield of cassava in East Nusa Tenggara.

In 2017 we did variety testing and intercropping experiments. During field day, most of participated farmers interest to plant the introduced variety. Based on the yield, crop performance, and taste, the preferences are Gajah, Malang 4, and Faroka. After looking the performance and yield of maize in the experiment, farmers convince that increasing cassava population in their maize crop did not necessarily decrease maize yield.

The work describe here was discussed the performance introduce cassava variety and cropping system on farmers' income at Sikka District, East Nusa Tenggara.

### **METHODS.**

Cassava was planted on farmer's field, by farmers. Except plant spacing, the cultivation (land preparation, plant spacing, fertilizer, weeding) was done according to farmers practice. Project help with cutting materials, fertilizer and a small amount of cash money for weeding. Project also provided supervision to ensure that the work was done properly.

During harvesting, some field days were conducted. After harvesting, farmers hand over 50% of their cassava stem to the project to be distributed to other farmers. As the compensation, project paid Rp.500.- per stem (can be used up to 5 cutting). To measure the yield, the project team took 10 farmers field randomly as the samples. In addition to yield, observation was done for the problems and farmers' opinion. The yield data of previous year was also collected from the farmer. If the farmer could remember, he asked to make a comparison; higher, about the same or lower.

### **RESULTS.**

In 2017, there were 45 farmers s adopted the project activity; 21 of them planting new cassava varieties, and 23 practice improve-crooping system. Each farmers planted 0.2 – 0.3 ha varieties on their land. The participated farmers increased to 60 farmers in 2018. The yield of farmers' crops IW presented in Table 1.

Data presented in Table 1 show that, in general the yield of introduced cassava variety is higher compared with the local variety. The yield of introduced cassava varieties varies from about 24 t/ha to 46 t/ha, whereas the local variety only 13 to 23 t/ha.

Table 1. Yield of cassava and maize in Farmer' field.

No	Name	Address	Plants/Variety	Yield (t/ha)	Area/No of plants	Previous yield (t/ha)
1.	Ignasius Iking	Dsn. LangirKec. Kangai	Gajah	38.25	0.15 ha (880)	7 (4x1 m) <sup>*)</sup>
			Faroka	24.75	0.09 ha (570)	
			Local	12.40	0.75 ha (4700)	
2	Mateus suir	DsnHululer	Maize	6		4
			Gajah	35.55	0.01 ha (100)	8 (4 x 1m) <sup>*)</sup>
			Faroka	30.52	0.01 ha (100)	
			malang 4	46.45	0.0125 (125)	
			Tambak udang	0.42	10 plants	
Local	23.46	0.30 ha (3000)				
3	Ibu Rubensia	DsnHululer	Maize	4		3
			Gajah	20.81	0.1 ha (600)	8 (4 x 1m) <sup>*)</sup>
			Local	12.93	0.2 ha	
Maize	5					
4	Ibu Agustina	DsnHululer	Gajah	39.37	0.04 ha (250)	8
			Local	18.00	0.2 ha	
			Maize	X		
5	Bapak Zakarias	DsnSolor	Gajah	50.40	0.25 ha (2500)	10
			Local	X		
			Maize	X		
6	Ibu Agustina	Dsn solor	Gajah	35.62	0.1 ha (800)	12
			Faroka	28.65	0.1 ha (800)	
			Tambak udang	25.65	0.1 ha (800)	
			Local	X		
			Local	X		
7	Bpk leong	Dsn solor	Faroka	26.87	0.2 ha	8
			Local	X		
			Maize	5		
8	Antonius Siga	Bloro	Gajah	34.84	0.20 ha (1250)	6
			Faroka	23.62	0.20 ha (1250)	
			Local	16.31	0.55 ha	
9	Bpk Rubensia	Koting	Maize	6		3
			Gajah	40.50	0.15 ha (1000)	8
			Faroka	23.62	0.1 ha (600)	
10	Ibu Korina	Hokeng	Local	X		
			Maize	6		
			Malang 4	46.70	0.07 ha (700 )	
			Local	21.60		12
			Maize	5		3

Note: Previous cassava and Maize yield was based on the answer of the farmers

Furthermore, it was found that for the farmers who planted the local variety, the yield of the previous year was generally lower. The same phenomena observed for maize. The yield of previous local cassava variety varied from 7 to 12 t/ha, this is lower compared to the present year (farmers adopt the improve technology) which can be up to 23 t/ha. Maize yield for the previous year about 3 t/ha, and the present year could be up to 6 t/ha.

#### DISCUSSION AND CONCLUSSION

The results discussed previously showed that by adopting the improved production technology, farmers could increase their cassava and maize yield. The increase of cassava yield was undoubtedly due to the use of high yielding introduced cassava, followed by increasing cassava population and fertilizer application. With local cassava variety, the yield could be increase by increasing cassava population in between maize yield followed by the correct fertilizer application. Thus, farmers did not necessarily afraid that increasing cassava population in their maize crop would decrease maize yield.

To make a comparison farmers' income, we used Antonius Siga, Mateus Suir, Ibu Rubensia, Bpk. Rubensia, and Ibu Korina as the base of calculation. These 5 farmers practice intercropping system and planted both introduced and local cassava variety. If whole land was planted with local cassava variety their land would produce 33.38 t/ha fresh cassava and 5.2 t/ha maize grain. With the price of cassava tubers Rp. 1,000.-/kg and maize Rp. 3,400.-/kg they would obtain the gross income Rp. 34.9 millions. By using the introduced cassava variety, the yield of cassava increased to 33.38 t/ha, hence their gross income wa Rp. 50,9 millions. The gross income for the pervious yield ( 8.2 t cassava tubers/ha and 3.4 t maize grain/ha) was only 19.7 millions/ha.