

CASSAVA LEAF PRODUCTION RESEARCH IN VIETNAM

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ABSTRACT

Cassava is an annual root crop and it provides food for hundreds of millions of people in the tropical and sub-tropical areas of the world. The crop has a reputation of producing high yields and being tolerant to poor soil. The yield of dry cassava leaves, also known as cassava “hay”, which includes the young stem and leaves, can be quite high if the crop is pruned every 2-3 months. This “hay” is a good source of protein and also contains many nutrients such as nitrogen, phosphorus, potassium, calcium and magnesium.

Experiments on the production of cassava hay have been conducted in Hung Loc Agricultural Research Center and at Hue University with the purpose of determining cassava hay yield by four different varieties as affected by different planting densities. The results of this research indicate that:

-among four cassava varieties, the new line KM 140-2 produced both the highest cassava root and hay yield.

-between two plant populations used, the population of 22,222 plants/ha (0.9 x 0.5 m plant spacing) resulted in the highest cassava hay yield.

INTRODUCTION

In Vietnam the roots of cassava are an important source of energy for human consumption and in animal feeding. However, the young foliage, including the green stem, leaves and petioles, cut two or three times at 15-20 cm above the ground can become an important and cheap source of protein for animal feeding.

This research was undertaken to identify the best varieties and plant spacing for maximizing both root and forage yields as well as the economic benefits for farmers.

MATERIALS AND METHODS

Four cassava varieties, i.e. KM94, KM140-2, KM98-5 and SM937-26, were planted at two spacings of 0.9x0.9 m and at 0.9x0.45 m. Treatments were arranged in a split-plot design with varieties in main plots and plant spacing in subplots. Thus, there were in total eight treatment combinations.

Young tops of cassava, including leaves, petioles and green stem were cut three times: at five and seven months after planting and at time of root harvest. Cassava tops were harvested by breaking the stems at 15 cm above the ground. Fresh weight of tops was measured and samples were taken for dry matter determination and chemical analysis.

CONCLUSIONS

Based on the results of the experiment (**Tables 1 and 2**) it was found that plant spacing and varieties both had significant effects on cassava root yield, and cassava dry forage yield as well as on net income. Among the four cassava varieties, KM140-2 produced the highest root yield but KM98-5 produced the highest forage yield and net income at both plant spacings. Between the two plant spacings, the narrower spacing of

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0.45x0.90 m (= 24,690 plants/ha) resulted in higher cassava forage yields than the wider spacing at 0.90x0.90 m (= 12,345 plants/ha).

Table 1. Effect of plant spacing on the fresh root and total dry forage yield, as well as the total amounts of N, P and K removed in the leaf harvest when four cassava varieties were planted at Hung Loc Agricultural Research Center in Dong Nai, Vietnam in 2001/02.

Treatments ¹⁾	Fresh root yield (t/ha)	Total dry forage yield (t/ha)	N P K		
			(kg/ha)		
S-1 - KM 94	8.68	4.63	181.5	12.1	63.2
- KM 98-5	7.91	5.33	216.4	13.1	97.3
- KM 140-2	11.29	3.39	87.8	6.1	61.8
- SM 937-26	8.49	3.79	151.2	9.3	70.8
S-2 - KM 94	8.39	9.17	359.5	24.0	125.3
- KM 98-5	7.33	9.74	395.4	23.0	177.8
- KM 140-2	9.22	6.86	177.7	12.3	130.9
- SM 937-26	5.88	7.37	294.1	18.0	137.6

¹⁾ S-1 = spacing at 0.90x0.90 m; S-2 = spacing at 0.90x0.45 m.

Table 2. Effect of plant spacing on the fresh root and total dry forage yield, as well as the gross and net income obtained when four cassava varieties were planted at Hung Loc Agricultural Research Center in Dong Nai, Vietnam in 2001/02.

Treatments ¹⁾	Fresh root yield (t/ha)	Total dry forage yield (t/ha) ²⁾	Gross income ³⁾	Production costs ⁴⁾	
				('000 dong/ha)	
S-1 - KM 94	8.68	4.63	10,764	6,723	4,041
- KM 98-5	7.91	5.33	11,475	6,723	4,752
- KM 140-2	11.29	3.39	10,053	6,723	3,330
- SM 937-26	8.49	3.79	9,421	6,723	2,698
S-2 - KM 94	8.39	9.17	17,447	9,323	8,124
- KM 98-5	7.33	9.74	17,835	9,323	8,512
- KM 140-2	9.22	6.86	14,347	9,323	5,024
- SM 937-26	5.88	7.37	13,642	9,323	4,319

¹⁾ S-1 = spacing at 0.90x 0.90 m; S-2 = spacing at 0.90x0.45 m.

²⁾ The un lignified upper part of the stem with leaves and petioles were cut two times during the growing cycle as well as at harvest; dry forage is the sum of these 3 cuts after drying.

³⁾ Prices: cassava 440/kg fresh roots
cassava dry forage 1,500/kg

⁴⁾ Labor costs cassava production S₁ 3.1 mil. dong/ha

S₂ 4.0 mil. dong/ha

Planting material: S₁ = 12,345 plants/ha 0.5 mil. dong/ha

S₂ = 24,690 plants/ha 1.0 mil. dong/ha

Labor for leaf cutting (3x): S₁ 1.2 mil. dong/ha

S₂ 2.4 mil. dong/ha

Fertilizer costs: 175 N+ 75 P₂O₅ +75 K₂O /ha 1.623 mil. dong/ha

Labor for fertilizer application (3x) 0.3 mil. dong/ha