Table 1. Biomass dry matter (BDM) and grain yield (YIELD) of cover crops cultivated before rice crops. Cuaia and Nambaua sites, Pemba city, Province of Cabo Delgado Moçambique, Growing season 2014.
*Means followed by the same letter vertically, did not differ by the Tukey test at p<0.05.

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"Solidarity in a competing world — fair use of resources"

Rice Grain Yield as Affected by Grain-producing Cover Crops in Cabo Delgado, Mozambique

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INTRODUCTION

Rice is considered a staple food for countries worldwide. Specifically in Mozambique, this grain can contribute to reduce poverty of 3.1 million people directly dependent of rice grains production and 20 million Mozambicans indirectly dependents. However, the rice grain yield in this country is very low, ranging from 970 kg ha^{-1} to 1170 kg ha^{-1}. The inclusion of cover crops before rice cultivation besides providing benefits to the environment such as soil protection, release of nutrients, moisture maintenance and weed control, cover crops can increase food production for grain production.

The aim of this study was to evaluate the production of biomass and grain cover crops, yield components, and grain yield of rice in Mozambique.

MATERIAL AND METHODS

The study was conducted in two sites located in the province of Cabo Delgado, in Mozambique in the growing season 2015/2016. The experimental design was a randomized block in a factorial 2×6, with four repetitions. Treatments were carried out in two locations (Cuaia and Nambaua) and 6 vegetation covers: Millet (*Pennisetum glaucum* L.); namarra bean (*Lablab purpureus* (L.) Sweet), velvet beans (*Mucuna pruriens* L.), oloco beans (*Vigna radiata* (L.) R. Wilczek), cowpea (*Vigna unguiculata* L.), and fallow.








CONCLUSION

All covers provided similar results for rice grain production. Therefore, the cover crop *V. unguiculada* showed to be the best once it had the highest grain production (1793 kg ha^{-1}).

Rice grain yield in Nambaua (2594 kg ha^{-1}) was two times greater than average of Mozambique, while in Cuaia the grain yield (4509 kg ha^{-1}) was four times higher than the average grain yield of rice in Mozambique (1160 kg ha^{-1}).

RESULTS AND DISCUSSION

Table 1. Biomass dry matter (BDM) and grain yield (YIELD) of cover crops cultivated before rice crops. Cuaia and Nambaua sites, Pemba city, Province of Cabo Delgado Moçambique, Growing season 2014.

Factors	BDM	YIELD
Cover crops	kg ha^{-1}	
Pennisetum glaucum	1000 b	238 c
Lablab purpureus	3188 a	700 b
Mucuna pruriens	3213 a	800 b
Vigna radiata	350 b	209 c
Vigna unguiculata	3163 a	1793 a
Site		
Cuaia	1815 b	780 a
Nambaua	2550 a	716 a
Factors	ANOVA (F probability)	
Cover crop (CC)	<0.001	0.0307
Site	0.0109	0.9027
CC*Site	0.0271	0.5548

*Means followed by the same letter vertically, did not differ by the Tukey test at p<0.05.

Figure 1: Overview of the field in Cuaia – May 2016.

Table 2. Plant heigh (PH), number of tiller (NT), number of panicle (PAN), number of grains per panicle (GRAIN), mass of 1000 grains (MGRAIN) and grain yield of rice as affected by cover crops and sites. Cuaia and Nambaua sites, Pemba city, Province of Cabo Delgado Moçambique, Growing season 2014/2015.

Cover crops	PH	NT	PAN	GRAIN	MGRAIN	YIELD
	cm	n. m^{-1}	n. m^{-1}	n. panicle^{-1}	grams	kg ha^{-1}
Pennisetum glaucum	56.1	18.5	14.0	141	24.7	3248
Lablab purpureus	55.0	20.6	13.9	158	23.8	3499
Mucuna pruriens	55.4	20.6	13.4	151	25.5	3586
Vigna radiata	57.9	21.5	16.3	147	25.6	3700
Vigna unguiculata	62.6	18.6	13.8	146	25.3	3816
Fallow	60.4	20.4	13.3	145	23.9	3586
Site						
Cuaia	74.7 a	22.0 a	15.3 a	158 a	24.9 a	4509 a
Nambaua	40.3 b	18.0 b	12.9 b	139 b	24.8 a	2594 b
Factors	ANAVA (F probability)					
Cover crops (CC)	0.8758	0.8724	0.2055	0.7925	0.1368	0.8545
Site	<0.0001	0.0231	0.0024	0.0127	0.9835	<0.001
CC*Site	0.7905	0.2963	0.1669	0.1629	0.2411	0.3655

*Means followed by the same letter vertically, did not differ by the Tukey test at p<0.05.


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