Tropical forages Mulato Grass and Forage Sorghum for silage conservation and sheep production in St. Kitts and Nevis

S Borucki[2], A Hosein[1], I Watts[3], J Berry[3] and L E Phillip[2]

[1]Caribbean Agricultural Research and Development Institute (CARDI), Trinidad and Tobago Unit;
[2]Animal Science Department, Faculty of Agricultural and Environmental Sciences, McGill University, Montreal, Canada;
[3]Department of Agriculture, Ministry of Agriculture and Marine Resources of St. Kitts and Nevis


Forage Sorghum, St. Kitts and Nevis; 02-2013


Mulato II Grass, St. Kitts and Nevis; 01-2013


Roaming sheep & goats, St. Kitts and Nevis, 07-2012

I. INTRODUCTION

- Small ruminants, as a micro-credit mechanism, can help address some of the causes of food insecurity, being a valuable agricultural resource producing food, fibre and income.
- In St. Kitts and Nevis as in many Caribbean islands a major factor limiting productivity of sheep and goats is poor nutrition. Natural pastures cannot support the desired productivity and insufficient forage in the dry season is a major constraint.
- Given the continued high world grain prices, the focus on forage-based feeding systems is imperative.
- 'Mulato' II grass is forage crop easy to sow and establish, and adapted to the regional weather conditions.
- Alternative crops, such as Forage Sorghum which are drought tolerant, yet high yielding, are suitable for silage conservation.
- The silage technique which is aimed at transferring a high production of the forage during the wet season towards the dry season must also be developed.

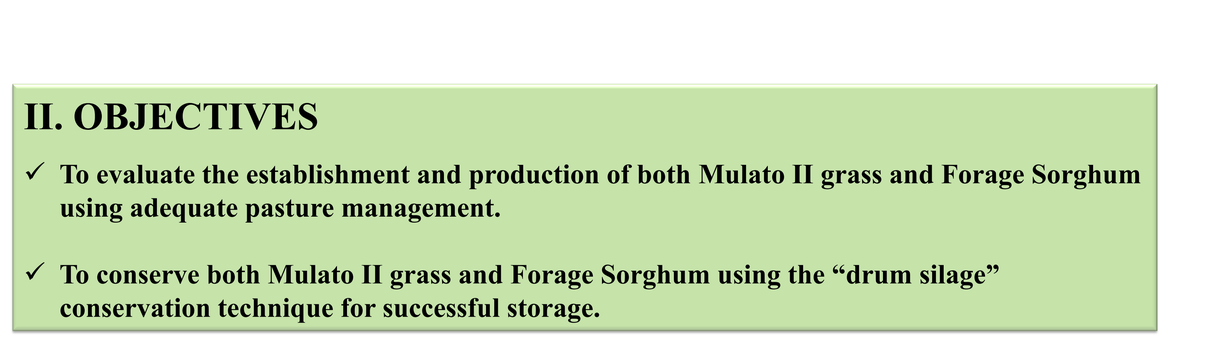
II. OBJECTIVES

- ✓ To evaluate the establishment and production of both Mulato II grass and Forage Sorghum using adequate pasture management.
- ✓ To conserve both Mulato II grass and Forage Sorghum using the "drum silage" conservation technique for successful storage.

III. METHODOLOGY

Two hectares of Great Scott brown mid-rib Forage Sorghum (*Sorghum bicolor*) were seeded in March 2nd and November 2012, at a rate of 22.4 kg/ha in rows separated by 0.6 m. Fertilizer was applied only during growth 227 kg/ha (NPK 15:15:15) for the 1st cycle and incorporated (110 kg urea/ ha) for the 2nd Cycle. Abamectin (250ml/ ha) was used to control earthworms and 4.4 ml/L (2, 4 D; Phenoxy/ phenoxyacetic acid) to control broad-leaf weeds.

Two hectares of Mulato II grass *Brachiaria hybrid* CIAT 36087 were seeded at 11 kg/ha in February 3rd ; one ha was re-seeded in April 19th at 18 kg/ha. For the re-seeded area, 20:10:10 NPK kg/ha were incorporated at seeding with pre-emergent herbicide 7.7 ml/L Pendimethalin.



IV. RESULTS: Establishment and Biomass

Figure 1. ESTABLISHMENT of Mulato II grass; March to October 2012

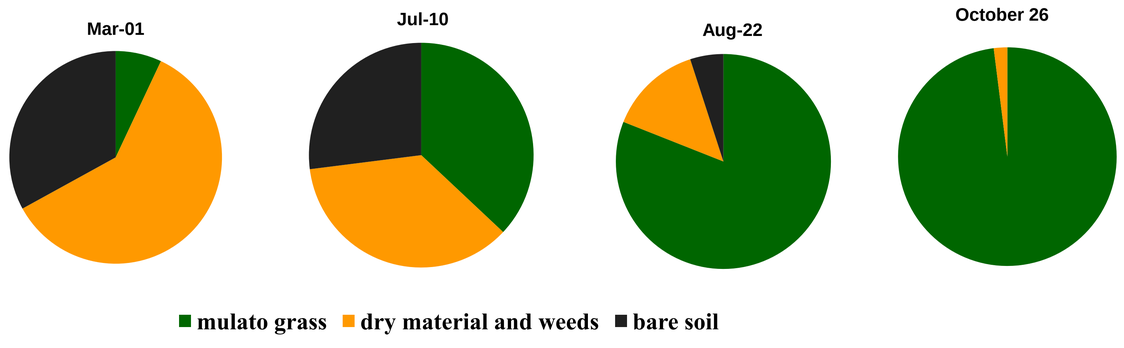
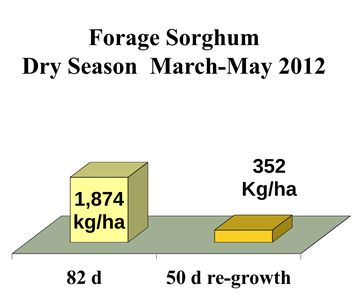


Table 1. ESTABLISHMENT of Forage Sorghum ; December 2012 to February 2013

Status/ Management	Days of growth	Sample (n)	Height (cm)	Tillers (#)	Area covered by the plant (%)	Area covered by weeds (dry or fresh) (%)	Bare soil (%)	Dry matter (DM) (%)
Vegetative	32	8	51 ± 12.4	0 -	25 ± 27.0	64 ± 33.0	11 ± 33.0	16 ± 2.5
Initial bloom	46	6	81 ± 22.8	6 ± 4.3	45 ± 32.6	55 ± 32.6	0 -	19 ± 0.9
Full bloom	67	6	127 ± 19.1	11 ± 4.2	53 ± 16.3	47 ± 16.3	0 -	28 ± 5.8
Harvest	84	6	104 ± 8.9	16 ± 8.9	53 ± 24.0	48 ± 24.0	0 -	35 ± 1.0
Re-growth	22	11	- -	- -	57 ± 13.5	43 ± 13.5	0 -	- -

Figure 2. BIOMASS production of FORAGE SORGHUM (kg dry matter DM/ha)



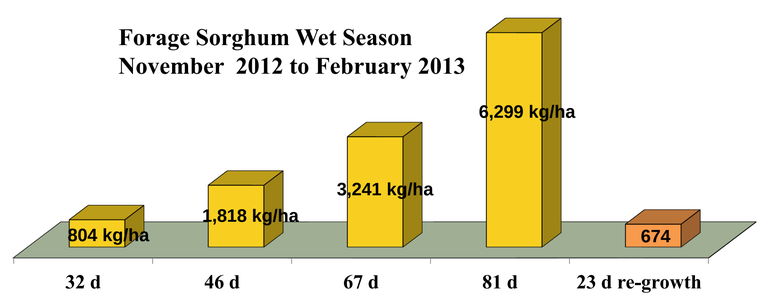
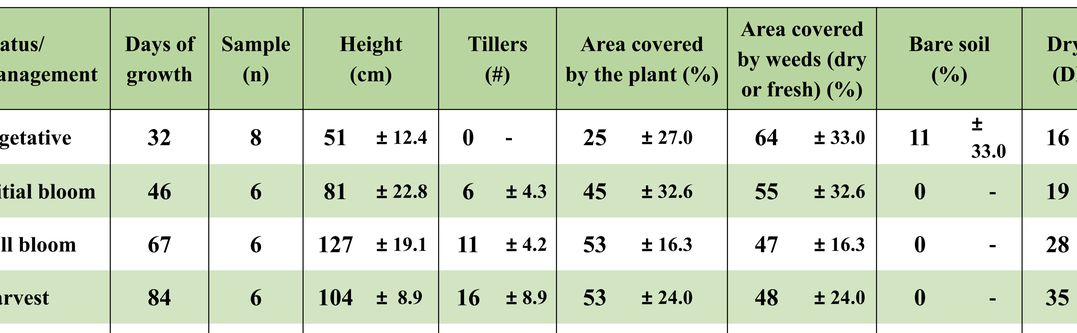


Figure 3. BIOMASS production of MULATO II grass (kg dry matter DM/ha)



V. CONCLUSIONS

Both Mulato II grass and Forage Sorghum were successfully established in the dry season and increased their yields 3 to 3.5 times in the wet season producing a surplus of forage that was successfully conserved using the silage technique for 6 months under optimal conditions of storage.

Mulato II grass yields for the wet season were comparable to results obtained in Research Stations in the Caribbean. However, only 23% of the potential of the Forage Sorghum variety was obtained, so there is still room to improve the management practices on this forage .

Acknowledgements

This work was carried out with the aid of a grant from the International Development Research Centre, Ottawa, Canada, and with financial support of the Government of Canada provided through the Canadian International Development Agency (CIDA)

REFERENCES:

Bean, B., McCollum, T., Becker, J., Blumenthal, J, Robinson, J., Brandon, R., Buttrey, E., VanMeter, R., and D. Pietsch 2010. 2010 Texas Panhandle Forage Sorghum Silage Trial. AgriLife Extension and Research Series. Available online: http://amarillo.tamu.edu/amarillo-center-programs/agronomy/forage-sorghum/

CARDI 2008. Caribbean Agricultural Research and Development Institute. Trinidad and Tobago Highlights 2007/08. Trinidad and Tobago Unit. PSC Number TT//002//09. Available Online. http://www.cardi.org/cardi-publications/virtual-library/

Gibson N and Hosein A. 2008 Introducing Mulato II: an improved forage for the Caribbean. CARDI Factsheet TT/008/08. St. Augustine, Trinidad and Tobago. Caribbean Agricultural Research and Development Institute. Available Online. http://www.cardi.org/cardi-publications/factsheets/livestock/

Singh, R.H., G. Seepersad and L.B. Rankine. 2006. The Small Ruminant Meat Industry in CARICOM. Competitiveness and Industry. Development Strategies. Executive Summary. The CARICOM regional Transformation Program for Agriculture. Available online. http://www.caricom.org/jsp/community/donor_conference_agriculture/small_ruminants_competitiveness_development_strategy.pdf