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## The production and nutritional composition of forage sorghum and hybrid forage millet cultivars as pasture crops

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**Key words :** forage sorghum , hybrid forage millet , production , nutritional composition

**Introduction** Forage sorghum (Sorghum x Sudan grass hybrid) and hybrid forage millet (*Pennisetum glaucum*) cultivars are palatable , high producing annual summer grasses used as forage for dairy and beef cattle in the Southern Cape of South Africa . The aim of this study was to quantify the dry matter production and quality of forage sorghum and hybrid forage millet cultivars as pasture crops .

**Materials and methods** The trial was carried out during the summers of 2004/2005 and 2005/2006 in a randomized small plot trial under irrigation on a Estcourt soil type . Fertiliser was applied to raise phosphorus level to 35 mg kg<sup>-1</sup> , potassium level to 80 mg kg<sup>-1</sup> and pH (KCL) to 5.5 Three weeks after emergence 60 kg N ha<sup>-1</sup> and 30 kg K ha<sup>-1</sup> were applied as top dressing and this was repeated following each cutting . The forage sorghum and hybrid forage millet cultivars were planted on the 25<sup>th</sup> of November 2005 and 24<sup>th</sup> of November 2006 in 150 mm rows at 22 kg ha<sup>-1</sup> and 12 kg ha<sup>-1</sup> respectively . The dry matter (DM) production , crude protein (CP) content ( % ) , total CP , metabolisable energy ME (MJ/kg DM) , total ME (MJ ME ha<sup>-1</sup>) and NDF of samples were determined when the first forage sorghum cultivar reached a height of 1 meter . All the cultivars were cut at a height of 150 mm and samples dried at 60°C for 72 hours .

**Results** The hybrid forage millet cultivars Hy Pearl Millet , Nutrifeed and Speedfeed produced more than 10 tons of DM ha<sup>-1</sup> under intensive defoliation conditions (Table 1) . The CP content and ME of hybrid forage millet and forage sorghum cultivars were high when repeatedly cut at a height of 1 meter . The NDF % of hybrid forage millet and forage sorghum cultivars was similar . The total CP (kg ha<sup>-1</sup>) and ME (MJ ha<sup>-1</sup>) were predominantly influenced by the DM production (kg ha<sup>-1</sup>) . The hybrid forage cultivars Hy Pearl Millet , Nutrifeed and Speedfeed are , under frequent cutting conditions , a better option for forage production than forage sorghum cultivars .

**Table 1** The DM production , crude protein content (CP) , total CP ha<sup>-1</sup> , NDF , ME and total ME ha<sup>-1</sup> of frequently cut irrigated forage sorghums and hybrid forage millet cultivars for one season (2005/2006) at Outeniqua Research Farm , George .

Cultivars (2005/2006)	DM (ton ha <sup>-1</sup> )	CP (%)	Total CP (kg ha <sup>-1</sup> )	NDF (%)	ME (MJ kg DM <sup>-1</sup> )	Total ME (MJ ha <sup>-1</sup> )
Hy Pearl Millet *	11.3 <sup>a</sup>	20	2232	60	10	113000
Nutrifeed *	11.0 <sup>ab</sup>	22	2393	57	9.8	107800
Speedfeed *	10.2 <sup>bc</sup>	21	2168	57	10.2	104040
Silk	9.4 <sup>cd</sup>	19	1786	56	10.1	94940
Milkstar *	9.4 <sup>cd</sup>	19	1739	60	9.6	90240
Jumbo	9.3 <sup>cde</sup>	19	1767	58	10.5	97650
PAC 8288	9.3 <sup>cde</sup>	20	1883	58	10.4	96720
Super King	9.1 <sup>def</sup>	20	1820	58	10.5	95550
Greengrazer	8.9 <sup>def</sup>	20	1780	59	10.5	93450
Superdan 401	8.9 <sup>def</sup>	19	1669	58	10.5	93450
Kow Kandy	8.7 <sup>def</sup>	19	1675	57	10.4	90480
Everlush	8.7 <sup>def</sup>	19	1653	57	10.8	93960
NS 1	8.7 <sup>def</sup>	19	1653	58	10.7	92020
SAC 710	8.6 <sup>defg</sup>	19	1634	58	10.5	89250
Haymaker	8.4 <sup>efg</sup>	19	1596	57	11.0	92400
Classic Grazer	8.3 <sup>fgh</sup>	19	1577	57	10.7	87740
Superdan	8.2 <sup>fghi</sup>	19	1558	58	10.7	86670
Kow Kandy Extra	8.2 <sup>fghi</sup>	20	1640	57	10.9	88290
Hunnigreen	7.6 <sup>ghij</sup>	19	1444	58	10.7	81320
Rambo	7.4 <sup>hijk</sup>	20	1480	57	10.5	77700
AGR 3404	7.4 <sup>hijk</sup>	19	1406	58	10.7	78110
Hygro 1 (Wei 6)	7.3 <sup>ijk</sup>	21	1533	73	10.8	77760
Revolution BMR	7.1 <sup>jk</sup>	20	1420	56	10.8	75600
Kow Kandy BMR	6.6 <sup>kl</sup>	20	1320	57	11.1	73260
BMR Grazer	6.6 <sup>kl</sup>	20	1320	56	11.5	74750
AGR 6201	5.9 <sup>l</sup>	18	1062	58	10.6	61480
Advanta BMR	4.1 <sup>m</sup>	19	779	57	11.6	47560

abcde : Means with no common superscript differ significantly (P<0.05)

LSD (0.05) = 0.96

\* hybrid forage millet