

Effect of cutting stages on re-growth dry matter production and nutritional value of five winter cereal cultivars in Moloto district Gauteng and Nooigedacht, Mpumalanga Province.

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Introduction

- The population growth between 1976 and 2011 in South Africa has increased.
- The population is expected to double within the next two decades.
- This will increase pressure on the natural agricultural resources and we have to work for food security (Pretorius et al, 1976)



Problem statement

- Due to shortage of adequate pasture in large parts of South Africa, winter survival poses a problem to farmers (Dannhauser, 1991).
- Animals loose weight in winter which leads to low reproduction and low milk, mutton and meat production.



Objective

- To determine the effect of cutting stages on re-growth dry matter production and nutritional value of five winter cereal cultivars



Materials and Methods

Experimental sites

- The research was done at two different localities in two different provinces.
- Dewageningsdrift Gauteng and Nooitgedacht Ermelo Mpumalanga.



Experimental Design

Three main treatments:

- Two planting dates
- Five cultivars
- Five cutting stages
- Three replications
- The layout within each large block was a randomized block design with split-plots.

Results and Discussion

Table 1: The influence of cutting treatment on the total DM (t/ha) production of the different winter pasture cultivars, planted on the 5th April 2007 at Dewageningsdrift.

Cultivars	Cutting treatments					Averages for cultivars
	Ct 8 + Regrowth	Ct 10 + Regrowth	Ct 12 + Regrowth	Ct 14 + Regrowth	Reprod stage	
Witteberg	3.26	2.72	4.12	5.68	2.50	3.65bc
Overberg	2.27	2.51	2.59	3.89	1.86	2.62c
LS 35	3.54	3.66	4.25	4.65	0.78	3.38bc
LS 62	3.67	3.92	4.36	6.38	2.17	4.10ab
Cloc 1	3.18	2.89	3.78	6.60	8.49	4.99a
Average	3.18b	3.14b	3.82b	5.44a	3.16b	
LSD						
Interaction	2.16					
Cultivars	1.28					
Cutting treatments	1.18					

* Ct 8 on the 31st May; Ct 10 on the 14th June; Ct 12 on the 28th June and Ct 14 on the 12th July 2007

Results and Discussion

Table 2. The average monthly DM Production (t/ha) of the five winter fodder crops, planted 2nd February 2007, at Nooitgedacht (Mpumulanga).

Cultivars	Cutting Treatments					Average for Cultivars
	First Cut	Second Cut	Third Cut	Forth Cut	Fifth Cut	
Witteberg	0.245	0.277	4.773	0.624	0.310	1.248a
Overberg	0.683	0.196	3.479	1.098	0.419	1.175a
LS 35	1.936	0.625	5.145	0.662	0.000	1.674a
LS 62	1.300	0.637	6.477	0.287	0.000	1.740a
Cloc 1	0.218	0.543	5.589	0.581	0.000	1.385a
Averages	0.87b	0.45b	5.08a	0.64b	0.14b	

LSD

Cultivars 0.889

* *First Ct on the 03rd July; Second Ct on the 31st July; Third Ct on the 28th August; Fourth Ct on the 25th September and Fifth Ct on the 23rd October 2007*

Nutritional Value of the five cultivars

Table 4. The nutritional value (ADF %, NDF % and CP %) of the five winter fodder crops at different regrowth stages, planted in April, at Dewageningsdrift.

Cultivars	Cutting Treatments	ADF %	NDF %	Crude protein %
Witteberg oats	8 weeks	23.07	44.37	11.63
	10 weeks	-	-	-
	12 weeks	22.41	39.21	8.62
	14 weeks	22.81	39.46	18.34
	Matured	31.32	52.52	20.02
	Average	24.90	43.89	14.65
Overberg oats	8 weeks	20.65	34.74	12.39
	10 weeks	19.85	32.28	12.02
	12 weeks	24.49	39.83	19.70
	14 weeks	21.44	38.45	14.82
	Matured	37.28	51.51	9.19
	Average	24.74	39.36	13.62
LS 35 rye	8 weeks	-	-	-
	10 weeks	27.77	43.54	18.36
	12 weeks	29.52	48.24	13.74
	14 weeks	25.43	44.03	11.53
	Matured	24.91	39.76	19.71
	Average	26.91	43.96	15.84
LS 62 stooling rye	8 weeks	25.34	36.76	17.71
	10 weeks	26.64	38.53	22.03
	12 weeks	27.79	44.93	22.64
	14 weeks	22.95	37.86	15.91
	Matured	36.66	56.83	12.37
	Average	27.88	42.98	18.13
Cloc 1 triticale	8 weeks	26.00	39.70	14.14
	10 weeks	-	-	-
	12 weeks	25.38	43.53	15.18
	14 weeks	25.75	43.63	20.87
	Matured	-	-	-
	Average	25.71	42.29	16.72

NB: The nutritional values of some treatments are not shown in the table due to the fact that they were destroyed in a fire, during the drying process.

Conclusion

- LS 62 stooling rye and Cloc 1 triticale proved to be late winter/spring producing cultivars.
- In addition, LS 62 and Cloc 1 triticale were the highest producers with an average of > 6.0 t/ha when defoliated initially 14 weeks after planting and two re-growth cuts was achieved in very treatment.



Conclusion

- ADF for all five cultivars was below 30% first cut in the young stages. During the mature stage the ADF percentage of LS 62 stooling rye, Witteberg and Overberg oats > 30%.
- NDF of all five cultivars were below 45% - first cut, and the NDF % - last cut (mature) of LS 62 stooling rye, Witteberg and Overberg oats were > 50%.



Conclusion

- The CP content was in most cases $>14\%$, except Witteberg and Overberg oats, in a young stage and Overberg oats and LS 62 stooling rye - mature stage.



Recommendations

Species	Cultivar	Locality	Planting date	Mid-winter growth	Late winter/ Spring growth	Spring Growth
Stooling rye	LS 35	Nooitgedacht, Cool*	February	X		
		Dewageningsdrift, Warmer	April	X	X	
	LS 62	Nooitgedacht, Cool*	February	X		
		Dewageningsdrift, Warmer	April		X	X
Oats	Overberg	Nooitgedacht, Cool*	February		X	
		Dewageningsdrift, Warmer	April	X		
	Witteberg	Nooitgedacht, Cool*	February	X		
		Dewageningsdrift, Warmer	April		X	
Triticale	Cloc 1	Nooitgedacht, Cool*	February	X		
		Dewageningsdrift, Warmer	April		X	