

The effects of *Saccharomyces cerevisiae* fermentation product on the performance of creep fed Boer cross kids in regards to average daily gain and weaning weights on alfalfa and grain supplementation.



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Abstract:

The objectives of this study were to determine the effects of *Saccharomyces cerevisiae* fermentation product on creep fed kids and to determine their average daily gain (ADG) to improve the final weaning weights. Boer-cross kids and nannies were used for the study. This study was conducted over a period of five weeks from April to May 2019 at Sul Ross State University feedlot. Animals were divided into two groups based on birth weights and twinning with 4 nannies and 6 kids per group. Both groups were fed a base diet of Bermuda/alfalfa hay and a 14% CP goat pellet at rate 0.11kg/h/d and 12% sweet feed for the kids was offered with top-dress and ad libitum alfalfa hay in creep feeders. The fermentation product *saccharomyces cerevisiae* was offered in a top-dress with 0.11 kg of ground corn to the treatment kids at 4g per head per day. The body weight (BW) were measured 1x a week to calculate ADG on kids and feed samples were collected 2x a week and dried in a 55C oven and ground through a 1mm Wiley mill screen for later analysis for DM, NDF, ADF, ash, and CP. We observed a significant effect in overall group feed intake ($P < 0.001$) with the treatment group consuming more than the control, but there was not a significant difference in ADG of kids between the groups ($P > 0.23$). The small sample size may have hindered the experiment and it would be beneficial to repeat the experiment with a larger number of animals. Overall, the *Saccharomyces cerevisiae* fermentation product did not significantly improve ADG or weaning weights in creep-fed Boer-cross kids.

Objectives:

To determine the effects of *Saccharomyces cerevisiae* on the performance of nursing kids. To determine the (ADG) on creep-fed kids. To determine the effects of the product on the final weaning weights of Boer cross kids.

Materials and Methods:

Eight nannies & 12 kids divided into 2 groups in a randomized block study for 5 weeks.

Twenty-four grams (4g/h) per day of NaturSafe Diamond V® supplement was offered to trt kids in a top-dress of Grd corn

Animals were fed at a 3-5% refusal rate a mix of Bermuda & Alfalfa & sheep pellets at 2% BW.

Kids were creep-fed sweet feed top-dressed w/ grd corn (0.11kg/grp).

Animals were fed 1x/d and orts were collected daily.

Samples collected 2x/wk, compiled by wk & analyzed for DM, Ash, aADF, aNDF, and CP.

Data was analyzed using Proc MIXED procedure of SAS version 9.1 and Tukey's for statistical significance.

Table 1: Diet Ingredients on a DM basis

+	%DM	%aNDF	%aADF	%CP	%Ash
Alfalfa	99.6	32.1	21.1	24.6	11.6
Bermuda	99.6	57.8	25.6	17.1	8.7
Grd Corn	99.5	3.9	0.7	8.4	1.8
Mineral	99.7	1.6	0.41	0.57	80.4
Pellets	99.6	26.0	12.5	20.6	10.4
Ctrl Mix	99.5	17.6	7.7	12.2	7.6
Trt Mix	99.5	20.2	8.9	13.3	8.2

Table 2: Animal Performance

	Ctrl	Trt	SE	P<
DMI (kg/d)	9.93	11.98	0.29	0.001
DMI (h/d/kg)	1.66	2.00	0.05	0.001
ADG kids (kg)	0.20	0.21	0.07	0.23
Eff (ADG/DMI)	0.02	0.20	0.007	0.48

Table 3: Feed intakes per group in kg on a dry matter basis

WK	GRP	DMI (KG/D)	P<	EFF. (ADG/DMI/GRP)	P<	EFF. (ADG/DMI/HD)	P<
1	Ctrl	8.89	0.001	0.033	NS	0.196	NS
	Trt	11.74		0.023		0.139	
2	Ctrl	10.27	0.001	-----	NS	-----	NS
	Trt	12.27		-----		-----	
3	Ctrl	10.07	0.03	0.009	NS	0.052	NS
	Trt	11.62		0.009		0.054	
4	Ctrl	10.83	0.01	0.008	NS	0.050	NS
	Trt	12.82		0.003		0.019	
5	Ctrl	9.57	0.001	0.035	NS	0.211	NS
	Trt	11.47		0.034		0.203	

*NS= defined as $P < 0.15$

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Conclusion:

The small sample size and diverse weather conditions may have altered the overall study results. This study showed no overall impact on animal performance due to the increased consumption of feed by the nannies and kids in the treatment group. Positive results have been reported in cattle on feed efficiency with the inclusion of *Saccharomyces cerevisiae* fermentation product (Poppy et al., 2012)(Xiao et al., 2016). However, in other studies with sheep there weren't any significant effects just like the current study with goats (Acros-Garcia et al., 2000; Obeidat et al., 2018). Further study is warranted to conclusively demonstrate if a yeast fermentation product will have a positive effect on overall animal performance in growing kids. The study needs to be repeated with a larger sample size and potentially both kids and nannies supplemented with the yeast fermentation product to help control variation.

Implications:

Overall, the *Saccharomyces cerevisiae* fermentation product did not significantly improve ADG or weaning weights in creep-fed Boer-cross kids.



Citations:

Arcos-Garcia J.L., F. A. Castrejon, G. D. Mendoza, E.P. Perez-Gavilan. 2000. Effects of two commercial yeast cultures with *Saccharomyces cerevisiae* on ruminal fermentation and digestion in sheep fed sugar cane tops. Livestock Prod Sci. 63:153-157.

Obeidat S. Belal, Kamel Z. Mahmoud, Mohammad D. Obeidat, Mysaa Ata, Rami T. Kridli, Serhan G. Haddad, Hosam H. Titi, Khaleel I. Jawasreh, Hosam J. Altamimi, Hadil S. Subih, Safaa M. Hatamleh, Majdi A. Abu Ishmais and Ruba Abu Affan. 2018. The effects of *saccharomyces cerevisiae* supplementation on intake, nutrient digestibility, and rumen fluid pH in Awassi female lambs. Vet World. 2231-0916.

Poppy, G. D., A. R. Rabiee, I. J. Lean, W. K. Sanchez, K. L. Dorton, and P. S. Morley. 2012. A meta-analysis of the effects of feeding yeast culture produced by anaerobic fermentation of *Saccharomyces cerevisiae* on milk production of lactating dairy cows. J. Dairy Sci. 95:6027-6041.

Xiao J. X., G.M. Alugongo, R. Chung, S. Z. Dong., S. L. Li, I. Yoon, Z. H. Wu, Z. J. Cao. 2016. Effects of *Saccharomyces cerevisiae* fermentation products on dairy calves: Ruminal fermentation, gastrointestinal morphology, and microbial community. J. Dairy Sci. 99: 5401-5412.