

Appendix A Nutrient composition of experimental diets (dry matter basis)

Items (%) ¹⁾	Starter	TMR
Ingredients		
Cornstalk		40.00
Corn	53.20	35.50
Soybean meal	9.10	15.00
Wheat bran	2.00	7.20
Soybean skin	6.20	
Beet pulp	4.70	
Extruded Soybean	8.50	
Fermented soybean meal	9.60	
Soybean oil	2.20	
Whey powder	2.00	
Limestone	1.20	0.30
CaHPO ₄		0.20
NaCl	0.30	0.80
Premix ²⁾	1.00	1.00
Total	100.00	100.00
Chemical compositions		
Dry matter	95.83	77.20
Gross energy, MJ/kg DM	17.56	15.07
Crude protein	21.20	14.61
Neutral detergent fiber	16.44	37.60
Acid detergent fiber	7.04	21.81
Calcium	0.74	0.70
Phosphorus	0.48	0.43

¹⁾Chemical composition measured by the AOAC method. TMR: Total Mixed Rations.

²⁾Premix containing: 17456 IU/kg of vitamin A, 50 mg/kg of vitamin E, 3740 IU/kg of vitamin D, 98.70 mg/kg of Fe, 72.90 mg/kg of Zn, 57.40 mg/kg of Mn, 15.94 mg/kg of Cu, 0.33 mg/kg of Se, 1.30 mg/kg of I and 0.39 mg/kg of Co.

Appendix B Effect of age on rectum fungal bacterial community of lambs at phylum (%)

Item ¹⁾	Age (day)									SE	P-value		
	0 d	3 d	10 d	20 d	30 d	45 d	60 d	90 d	120 d		M	AN	Li
											OV	Ar	drati
											A	ar	c
Ascomycota	68.58 ^a	91.15 ^c	88.65 ^b _c	88.49 ^b _c	73.91 ^a	66.34 ^a	72.70 ^a	75.43 ^{ab} _c	66.32 ^a	1.66	0.00	0.0	0.014
Basidiomycota	5.67 ^b	1.88 ^a	1.45 ^a	1.44 ^a	2.70 ^{ab}	3.63 ^b	3.75 ^b	2.33 ^{ab}	4.28 ^b	0.26	<0.001	0.9	0.029
Neocallimastigomycota	0.10	1.04	0.59	0.64	0.70	3.25	3.45	1.14	1.07	0.36	0.72	-	-
Mortierellomycota	0.43 ^{ab}	0.91 ^{abc}	0.96 ^{abc}	1.33 ^{bcd}	2.14 ^{cd}	0.39 ^a	0.72 ^{abc}	2.37 ^d	0.83 ^{abc}	0.14	0.00	0.1	0.193
Glomeromycota	0.08	0.31	0.45	0.26	0.25	0.38	0.17	1.85	1.99	0.21	0.80	-	-

¹⁾ The days after birth. There are 10 lambs used in our study.

Values within a row with different superscripts differ significantly at $P < 0.05$.

Appendix C Effect of age on rectum fungal bacterial community of lambs at genus level (%)

Item ¹⁾	Age (day)									S	P-value		
	0 d	3 d	10 d	20 d	30 d	45 d	60 d	90 d	120 d		E M	AN OV A	Lin ear
<i>Aspergillus</i>	4.0 4 ^a	4.4 7 ^b	9.7 1 ^{bc}	18. 61 ^c	16. 51 ^c	20. 01 ^c	13. 17 ^c	16. 29 ^c	17. 66 ^c	1. 07	<0. 001	<0. 00	<0.0 01
<i>Microascus</i>	1.9 6 ^a	18. 19 ^d	24. 65 ^d	19. 95 ^d	11. 29 ^c	2.4 9 ^{ab}	2.3 4 ^{ab}	1.3 3 ^a	4.6 3 ^b	1. 28	<0. 001	<0. 00	<0.0 01
<i>Saccharomyces</i>	1.1 9 ^{ab}	0.7 2 ^a	0.7 6 ^a	1.0 0 ^a	1.6 7 ^a	6.4 0 ^{bc}	18. 10 ^d	8.9 7 ^{cd}	4.9 3 ^{bc}	0. 84	<0. 001	<0. 00	<0.0 01
<i>Zygosaccaromyces</i>	0.1 3 abc	0.0 4 ^{ab}	0.0 1 ^a	0.0 8 ^{ab}	14. 39 cd	11. 52 cd	6.5 1 ^{bc}	8.9 2 ^d	0.9 0 abc	1. 62 5	<0. 001	0.0 89	0.08 3
<i>Debaryomyces</i>	13. 01 ^c	3.7 8 ^b	1.3 2 ^a	0.9 7 ^a	0.8 0 ^a	0.5 6 ^a	1.0 8 ^a	0.5 0 ^a	2.5 2 ^a	0. 59	<0. 001	<0. 00	<0.0 01
<i>Chaetomium</i>	2.5 0 ^a	6.9 3 ^b	7.7 2 ^b	0.8 4 ^a	2.3 1 ^{ab}	0.4 5 ^a	1.2 3 ^a	1.5 8 ^{ab}	0.9 5 ^{ab}	0. 42	0.0 05	<0. 00	0.00 1
<i>Chrysosporium</i>	4.6 9 ^{ab}	6.3 6 ^c	2.7 6 ^{bc}	2.5 0 ^{bc}	0.9 0 ^a	0.7 7 ^{ab}	0.6 1 ^{ab}	0.6 7 ^{ab}	1.8 4 ^{bc}	0. 35	<0. 001	<0. 00	<0.0 01
<i>Acremonium</i>	0.3 9 ^a	0.9 6 ^{ab}	0.5 1 ^{ab}	1.8 9 ^{bc} d	1.9 9 ^{bc}	1.4 1 ^{bc} d	3.0 3 ^{cd}	3.7 6 ^d	3.8 5 ^d	0. 21	<0. 001	<0. 00	<0.0 01
<i>Penicillium</i>	0.8 3 ^a	0.5 5 ^a	0.7 7 ^a	1.0 3 ^{ab}	1.1 4 ^{ab}	1.8 6 ^{bc}	2.1 4 ^b	5.3 3 ^c	2.5 5 ^{bc}	0. 20	<0. 001	<0. 00	<0.0 01
<i>Wallemia</i>	1.1 3 ^a	0.7 0 ^a	0.6 5 ^a	0.6 7 ^{ab}	0.8 1 ^a	1.6 4 ^{bc}	2.0 0 ^{bc}	1.2 5 ^{ab} c	3.4 0 ^c	0. 12	0.0 01	<0. 00	<0.0 01

<i>Mortierella</i>	0.4	0.9	0.9	1.3	2.1	0.3	0.7	2.3	0.8	0.	0.0	0.1	0.19
<i>a</i>	2 ^{ab}	0 ^{ab}	5 ^{ab}	2 ^{bc}	3 ^{cd}	8 ^a	0 ^{ab}	6 ^d	3 ^{abc}	13	02	14	5
		c	c	d			c		d	9			
<i>Pithoascus</i>	0.1	1.3	3.0	1.9	0.5	0.6	0.2	0.2	0.5	0.	<0.	0.0	0.00
<i>s</i>	2 ^a	1 ^{bc}	3 ^d	1 ^{cd}	7 ^{ab}	2 ^{ab}	8 ^{ab}	8 ^{ab}	0 ^{bc}	15	001	12	2
										0			

¹⁾ The days after birth. There are 10 lambs used in our study.

Values within a row with different superscripts differ significantly at $P < 0.05$.