

Forage and Corn Fermentation Compound Guidelines

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Revised: February, 2022

Notes: These guidelines and benchmarks were developed from Rock River Laboratory's extensive wet chemistry fermentation compound measure database, including over 13,000 analyses over five years. The benchmarks highlighted in green represent goals in most cases, with an exception being Acetic Acid and Lactic:Acetic when *L. buchneri* inoculants are used to preserve the feed.

*All units are expressed as percent of dry matter, unless otherwise noted.

Corn Silage				
Parameter, % of DM*	Mean	Median	15th Perc.	85th Perc.
pH	3.92	3.86	3.70	4.07
Lactic Acid	4.39	4.35	2.64	6.11
Acetic Acid	2.38	2.23	1.27	3.85
Lactic:Acetic ratio	2.64	1.91	1.17	3.75
Butyric Acid	0.04	0.00	0.00	0.12
Propionic Acid	0.10	0.00	0.00	0.24
Succinic Acid	0.21	0.19	0.00	0.38
Formic Acid	0.01	0.00	0.00	0.00
Total Acid	7.13	7.19	4.96	9.41
Ethanol	0.54	0.47	0.00	1.03
1,2-Propanediol	0.43	0.17	0.00	0.97
1-Propanol	0.15	0.00	0.00	0.20
2-Butanol	0.00	0.00	0.00	0.00
2,3-Butanediol	0.35	0.20	0.00	0.64
Total Alcohol	1.49	1.24	0.44	2.35

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Alfalfa Haylage				
Parameter, % of DM*	Mean	Median	15th Perc.	85th Perc.
pH	4.82	4.71	4.42	5.20
Lactic Acid	4.47	4.41	1.96	7.00
Acetic Acid	2.14	1.75	0.76	3.67
Lactic:Acetic ratio	3.38	2.50	1.05	4.98
Butyric Acid	0.42	0.05	0.00	0.40
Propionic Acid	0.12	0.00	0.00	0.29
Succinic Acid	0.40	0.34	0.10	0.70
Formic Acid	0.04	0.00	0.00	0.11
Total Acid	7.59	7.47	4.14	11.10
Ethanol	0.28	0.18	0.00	0.62
1,2-Propanediol	0.11	0.00	0.00	0.23
1-Propanol	0.04	0.00	0.00	0.00
2-Butanol	0.00	0.00	0.00	0.00
2,3-Butanediol	0.25	0.10	0.00	0.49
Total Alcohol	0.68	0.48	0.01	1.25
NH3-N, % CP	9.80	8.90	5.20	13.70

Grass Haylage				
Parameter, % of DM*	Mean	Median	15th Perc.	85th Perc.
pH	4.81	4.58	4.13	5.76
Lactic Acid	3.77	3.58	0.37	6.94
Acetic Acid	1.90	1.42	0.37	3.62
Lactic:Acetic ratio	3.43	2.62	0.64	5.70
Butyric Acid	0.43	0.00	0.00	0.48
Propionic Acid	0.14	0.00	0.00	0.33
Succinic Acid	0.25	0.17	0.00	0.52
Formic Acid	0.02	0.00	0.00	0.01
Total Acid	6.51	6.73	1.98	10.39
Ethanol	0.35	0.26	0.00	0.75
1,2-Propanediol	0.16	0.00	0.00	0.34
1-Propanol	0.06	0.00	0.00	0.05
2-Butanol	0.01	0.00	0.00	0.00
2,3-Butanediol	0.31	0.12	0.00	0.66
Total Alcohol	0.89	0.68	0.15	1.58
NH3-N, % CP	9.05	7.40	4.22	13.56

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Sorghum Silage				
Parameter, % of DM*	Mean	Median	15th Perc.	85th Perc.
pH	4.50	4.12	3.79	5.80
Lactic Acid	4.34	4.56	0.03	7.80
Acetic Acid	1.73	1.53	0.00	3.22
Lactic:Acetic ratio	4.26	3.20	1.25	5.63
Butyric Acid	0.12	0.00	0.00	0.17
Propionic Acid	0.08	0.00	0.00	0.16
Succinic Acid	0.22	0.19	0.00	0.44
Formic Acid	0.02	0.00	0.00	0.00
Total Acid	6.50	7.30	0.23	10.57
Ethanol	0.56	0.37	0.00	1.25
1,2-Propanediol	0.28	0.00	0.00	0.60
1-Propanol	0.03	0.00	0.00	0.00
2-Butanol	0.00	0.00	0.00	0.00
2,3-Butanediol	0.20	0.00	0.00	0.39
Total Alcohol	1.08	0.86	0.00	2.04
NH3-N, % CP	5.89	4.79	1.23	10.00

High Moisture Shell Corn				
Parameter, % of DM*	Mean	Median	15th Perc.	85th Perc.
pH	4.45	4.18	3.98	5.21
Lactic Acid	1.25	1.29	0.48	1.90
Acetic Acid	0.38	0.25	0.08	0.72
Lactic:Acetic ratio	5.90	4.49	1.54	9.58
Butyric Acid	0.03	0.00	0.00	0.04
Propionic Acid	0.05	0.00	0.00	0.14
Succinic Acid	0.03	0.00	0.00	0.08
Formic Acid	0.00	0.00	0.00	0.00
Total Acid	1.76	1.73	0.64	2.75
Ethanol	0.25	0.20	0.00	0.48
1,2-Propanediol	0.11	0.00	0.00	0.24
1-Propanol	0.01	0.00	0.00	0.00
2-Butanol	0.00	0.00	0.00	0.00
2,3-Butanediol	0.10	0.05	0.00	0.14
Total Alcohol	0.48	0.36	0.12	0.85