

Mixed Forage Hay	Count	Normal Range	Average	St. Dev
Crude Protein (%)	14235	12.20 -- 26.80	19.50	3.65
AD-ICP (%)	13832	0.88 -- 2.02	1.45	0.29
Protein Solubility (%)	13856	22.12 -- 45.47	33.79	5.84
ADF (%)	14150	23.69 -- 43.93	33.81	5.06
NDF (%)	14136	28.15 -- 60.87	44.51	8.18
NDFd 48 (%)	1594	30.52 -- 61.74	46.13	7.81
IVTDMD 48 (%)	1594	67.91 -- 85.57	76.74	4.41
NDFd 30 (%)	2111	26.52 -- 58.18	42.35	7.91
IVTDMD 30 (%)	2111	65.95 -- 84.33	75.14	4.60
NDFd 24 (%)	621	20.33 -- 58.35	39.34	9.51
IVTDMD 24 (%)	621	64.81 -- 81.71	73.26	4.22
Calcium (%)	14101	0.70 -- 1.90	1.30	0.30
Phosphorus (%)	14101	0.23 -- 0.45	0.34	0.05
Potassium (%)	14101	1.47 -- 3.31	2.39	0.46
Magnesium (%)	14101	0.17 -- 0.39	0.28	0.05
Sulfur (%)	14061	0.14 -- 0.38	0.26	0.06
Boron (ppm)	103	1 -- 81	38	22
Manganese (ppm)	256	1 -- 137	58	39
Zinc (ppm)	256	11 -- 53	32	10
Copper (ppm)	257	2 -- 24	13	5
Iron (ppm)	258	1 -- 1373	431	471
Sodium (ppm)	880	1 -- 2741	932	904
Chloride (%)	711	0.01 -- 1.22	0.53	0.34
Fat (%)	7839	1.76 -- 3.78	2.77	0.50
Ash (%)	7918	8.03 -- 14.77	11.40	1.69
Moisture (%)	10873	6.98 -- 20.39	13.69	3.35
Sugar (%)	7844	3.74 -- 12.06	7.90	2.08
Lignin (%)	7854	4.75 -- 9.63	7.19	1.22
R.F.V.	14050	72.93 -- 199.43	136.18	31.63
R.F.Q.	4171	72.53 -- 199.97	136.25	31.86
kd Rate	2375	2.15 -- 5.29	3.72	0.79

Legume Hay	Count	Normal Range	Average	St. Dev
Crude Protein (%)	2186	14.91 -- 25.35	20.13	2.61
AD-ICP (%)	2157	0.99 -- 1.99	1.49	0.25
Protein Solubility (%)	2155	26.17 -- 44.08	35.12	4.48
ADF (%)	2178	23.17 -- 42.59	32.88	4.86
NDF (%)	2176	29.08 -- 53.56	41.32	6.12
NDFd 48 (%)	257	32.14 -- 49.90	41.02	4.44
IVTDMD 48 (%)	257	66.94 -- 83.10	75.02	4.04
NDFd 30 (%)	319	26.84 -- 46.14	36.49	4.83

IVTDMD 30 (%)	319	67.11 -- 82.47	74.79	3.84
NDFd 24 (%)	68	24.60 -- 41.94	33.27	4.34
IVTDMD 24 (%)	68	66.27 -- 80.89	73.58	3.66
Calcium (%)	2199	1.03 -- 1.93	1.48	0.22
Phosphorus (%)	2199	0.24 -- 0.42	0.33	0.04
Potassium (%)	2199	1.59 -- 3.21	2.40	0.40
Magnesium (%)	2199	0.20 -- 0.40	0.30	0.05
Sulfur (%)	2195	0.15 -- 0.39	0.27	0.06
Manganese (ppm)	25	16 -- 64	40	12
Iron (ppm)	25	1 -- 4749	1016	1866
Sodium (ppm)	204	1 -- 3826	1356	1235
Chloride (%)	196	0.00 -- 1.25	0.58	0.33
Fat (%)	1276	1.80 -- 3.24	2.52	0.36
Ash (%)	1273	8.62 -- 14.81	11.71	1.55
Moisture (%)	2201	7.74 -- 18.10	12.92	2.59
Sugar (%)	1264	3.62 -- 11.30	7.46	1.92
Lignin (%)	1268	5.69 -- 9.37	7.53	0.92
R.F.V.	2171	86.76 -- 206.72	146.74	29.99
R.F.Q.	640	71.94 -- 198.56	135.25	31.65
kd Rate	352	2.12 -- 4.50	3.31	0.60

Grass Hay	Count	Normal Range	Average	St. Dev
Crude Protein (%)	2800	3.06 -- 17.18	10.12	3.53
AD-ICP (%)	2468	0.35 -- 1.79	1.07	0.36
Protein Solubility (%)	2465	4.46 -- 35.13	19.80	7.67
ADF (%)	2759	29.44 -- 55.62	42.53	6.54
NDF (%)	2574	48.86 -- 80.38	64.62	7.88
NDFd 48 (%)	212	33.68 -- 67.30	50.49	8.41
IVTDMD 48 (%)	212	48.34 -- 85.94	67.14	9.40
NDFd 30 (%)	263	28.04 -- 63.72	45.88	8.92
IVTDMD 30 (%)	263	45.46 -- 84.32	64.89	9.71
NDFd 24 (%)	116	30.99 -- 60.25	45.62	7.31
IVTDMD 24 (%)	116	46.36 -- 81.14	63.75	8.70
Calcium (%)	2598	0.07 -- 1.13	0.60	0.27
Phosphorus (%)	2599	0.09 -- 0.39	0.24	0.08
Potassium (%)	2599	0.56 -- 2.84	1.70	0.57
Magnesium (%)	2599	0.04 -- 0.32	0.18	0.07
Sulfur (%)	2566	0.03 -- 0.27	0.15	0.06
Manganese (ppm)	61	1 -- 157	63	47
Zinc (ppm)	61	10 -- 46	28	9
Copper (ppm)	63	3 -- 23	13	5
Iron (ppm)	61	1 -- 1939	490	725
Sodium (ppm)	496	1 -- 2754	542	1106
Chloride (%)	450	0.01 -- 1.10	0.42	0.34
Fat (%)	1420	1.34 -- 3.58	2.46	0.56

Ash (%)	1433	4.63 -- 14.92	9.77	2.57
Moisture (%)	2726	5.60 -- 18.79	12.19	3.30
Sugar (%)	1437	1.97 -- 12.29	7.13	2.58
Lignin (%)	1411	3.59 -- 10.81	7.20	1.81
R.F.V.	2560	48.34 -- 115.28	81.81	16.74
R.F.Q.	584	26.80 -- 155.86	91.33	32.27
kd Rate	333	1.60 -- 4.86	3.23	0.81

Mixed Haylage	Count	Normal Range	Average	St. Dev
Crude Protein (%)	18752	14.51 -- 25.27	19.89	2.69
AD-ICP (%)	18450	0.50 -- 2.28	1.39	0.44
Protein Solubility (%)	18447	35.27 -- 65.60	50.44	7.58
ADF (%)	18655	26.61 -- 39.29	32.95	3.17
NDF (%)	18704	32.45 -- 55.25	43.85	5.70
NDFd 48 (%)	3311	44.16 -- 61.02	52.59	4.21
IVTDMD 48 (%)	3311	72.92 -- 86.02	79.47	3.28
NDFd 30 (%)	5447	37.45 -- 58.05	47.75	5.15
IVTDMD 30 (%)	5447	70.04 -- 84.82	77.43	3.70
NDFd 24 (%)	1096	31.21 -- 54.23	42.72	5.76
IVTDMD 24 (%)	1096	67.52 -- 83.14	75.33	3.90
Calcium (%)	18655	0.82 -- 1.64	1.23	0.20
Phosphorus (%)	18655	0.31 -- 0.45	0.38	0.04
Potassium (%)	18655	2.13 -- 3.79	2.96	0.41
Magnesium (%)	18655	0.21 -- 0.39	0.30	0.04
Sulfur (%)	18634	0.20 -- 0.36	0.28	0.04
Boron (ppm)	82	12 -- 70	41	14
Manganese (ppm)	131	3 -- 89	46	22
Zinc (ppm)	131	17 -- 45	31	7
Copper (ppm)	131	4 -- 22	13	5
Iron (ppm)	131	1 -- 865	360	253
Sodium (ppm)	984	1 -- 1533	705	414
Chloride (%)	857	0.01 -- 1.16	0.54	0.31
Fat (%)	14993	2.11 -- 4.17	3.14	0.52
Ash (%)	15009	8.03 -- 15.01	11.52	1.74
Moisture (%)	18792	33.17 -- 77.04	55.11	10.97
Starch (%)	23	0.19 -- 2.29	1.24	0.53
Sugar (%)	14752	1.01 -- 8.57	4.79	1.89
Lignin (%)	14992	6.04 -- 10.94	8.49	1.23
pH	18346	4.14 -- 5.58	4.86	0.36
R.F.V.	18622	93.40 -- 180.40	136.90	21.75
R.F.Q.	9834	96.74 -- 201.48	149.11	26.19
kd Rate	5601	2.81 -- 9.91	6.36	1.77
Ammonia-N (%)	2417	0.66 -- 3.78	2.22	0.78
Lactic Acid (%)	2387	0.01 -- 6.78	3.30	1.74
Acetic Acid (%)	1983	0.01 -- 3.09	1.13	0.98

Legume Haylage	Count	Normal Range	Average	St. Dev
Crude Protein (%)	1741	15.93 -- 25.05	20.49	2.28
AD-ICP (%)	1245	0.52 -- 2.16	1.34	0.41
Protein Solubility (%)	1298	38.94 -- 65.22	52.08	6.57
ADF (%)	1702	26.10 -- 39.70	32.90	3.40
NDF (%)	1728	33.41 -- 51.61	42.51	4.55
NDFd 48 (%)	115	41.84 -- 58.96	50.40	4.28
IVTDMD 48 (%)	115	74.05 -- 86.01	80.03	2.99
NDFd 30 (%)	525	36.28 -- 56.12	46.20	4.96
IVTDMD 30 (%)	525	70.87 -- 84.21	77.54	3.33
NDFd 24 (%)	164	31.90 -- 52.32	42.11	5.10
IVTDMD 24 (%)	164	69.81 -- 83.31	76.56	3.38
Calcium (%)	1252	0.94 -- 1.64	1.29	0.17
Phosphorus (%)	1252	0.29 -- 0.47	0.38	0.04
Potassium (%)	1252	2.16 -- 3.80	2.98	0.41
Magnesium (%)	1252	0.22 -- 0.38	0.30	0.04
Sulfur (%)	1251	0.19 -- 0.37	0.28	0.04
Manganese (ppm)	12	6 -- 70	38	16
Zinc (ppm)	12	23 -- 37	30	3
Copper (ppm)	12	6 -- 22	14	4
Iron (ppm)	12	1 -- 1482	459	512
Sodium (ppm)	132	60 -- 1240	650	295
Chloride (%)	128	0.01 -- 1.22	0.59	0.32
Fat (%)	1136	1.98 -- 4.38	3.18	0.60
Ash (%)	1585	6.74 -- 17.22	11.98	2.62
Moisture (%)	1707	39.40 -- 79.35	59.38	9.99
Starch (%)	30	0.09 -- 2.37	1.23	0.57
Sugar (%)	1083	0.80 -- 8.32	4.56	1.88
Lignin (%)	1108	6.28 -- 10.62	8.45	1.08
pH	1231	4.14 -- 5.48	4.81	0.33
R.F.V.	1702	98.68 -- 182.32	140.50	20.91
R.F.Q.	743	100.10 -- 205.98	153.04	26.47
kd Rate	458	3.01 -- 9.75	6.38	1.69
Ammonia-N (%)	285	0.77 -- 4.01	2.39	0.81
Lactic Acid (%)	281	0.20 -- 7.10	3.65	1.72
Acetic Acid (%)	245	0.01 -- 3.37	1.19	1.09

Grass Haylage	Count	Normal Range	Average	St. Dev
Crude Protein (%)	475	5.79 -- 20.29	13.04	3.62
AD-ICP (%)	415	0.11 -- 2.09	1.10	0.50
Protein Solubility (%)	415	13.21 -- 62.86	38.04	12.41
ADF (%)	424	28.52 -- 44.28	36.40	3.94

NDF (%)	472	42.89 -- 73.19	58.04	7.58
*NDFd 48 (%)	33	37.74 -- 66.18	51.96	7.11
*IVTDMD 48 (%)	33	58.79 -- 83.17	70.98	6.09
*NDFd 30 (%)	88	37.08 -- 69.82	53.45	8.18
*IVTDMD 30 (%)	88	60.11 -- 86.83	73.47	6.68
*NDFd 24 (%)	28	38.55 -- 64.71	51.63	6.54
*IVTDMD 24 (%)	28	65.13 -- 78.89	72.01	3.44
Calcium (%)	419	0.14 -- 1.10	0.62	0.24
Phosphorus (%)	419	0.23 -- 0.45	0.34	0.05
Potassium (%)	419	1.22 -- 3.92	2.57	0.67
Magnesium (%)	419	0.11 -- 0.31	0.21	0.05
Sulfur (%)	419	0.14 -- 0.32	0.23	0.05
Sodium (ppm)	11	1 -- 1330	528	401
Fat (%)	322	1.97 -- 4.85	3.41	0.72
Ash (%)	322	3.33 -- 16.50	9.91	3.29
Moisture (%)	477	38.93 -- 80.13	59.53	10.30
Sugar (%)	309	1.51 -- 8.83	5.17	1.83
Lignin (%)	319	3.99 -- 10.31	7.15	1.58
pH	414	3.70 -- 5.80	4.75	0.52
R.F.V.	420	62.62 -- 131.24	96.93	17.16
R.F.Q.	142	71.44 -- 166.38	118.91	23.74
kd Rate	106	2.27 -- 7.23	4.75	1.24
Ammonia-N (%)	54	0.01 -- 4.32	1.51	1.41
Lactic Acid (%)	54	0.01 -- 7.38	3.06	2.16
Acetic Acid (%)	50	0.01 -- 3.04	1.18	0.93

* These results represent a different population.

Corn Silage	Count	Normal Range	Average	St. Dev
Crude Protein (%)	24798	5.26 -- 9.38	7.32	1.03
AD-ICP (%)	23803	0.43 -- 0.91	0.67	0.12
Protein Solubility (%)	23794	14.44 -- 59.60	37.02	11.29
ADF (%)	24635	15.01 -- 30.71	22.86	3.92
NDF (%)	24787	28.02 -- 50.62	39.32	5.65
NDFd 48 (%)	10038	49.34 -- 66.88	58.11	4.38
IVTDMD 48 (%)	10038	77.74 -- 89.50	83.62	2.94
NDFd 30 (%)	14549	44.33 -- 62.71	53.52	4.60
IVTDMD 30 (%)	14549	75.14 -- 88.22	81.68	3.27
NDFd 24 (%)	8250	40.04 -- 58.50	49.27	4.61
IVTDMD 24 (%)	8250	73.27 -- 87.05	80.16	3.45
Calcium (%)	23982	0.14 -- 0.36	0.25	0.06
Phosphorus (%)	23980	0.20 -- 0.30	0.25	0.03
Potassium (%)	23980	0.62 -- 1.40	1.01	0.20
Magnesium (%)	23980	0.12 -- 0.24	0.18	0.03
Sulfur (%)	23946	0.07 -- 0.13	0.10	0.01
Boron (ppm)	34	1 -- 14	7	3
Manganese (ppm)	175	1 -- 64	31	16

Zinc (ppm)	174	11 -- 51	31	10
Copper (ppm)	175	1 -- 22	10	6
Iron (ppm)	175	1 -- 977	292	343
Sodium (ppm)	880	1 -- 665	250	207
Chloride (%)	779	0.01 -- 0.63	0.29	0.17
Fat (%)	21652	1.87 -- 3.87	2.87	0.50
Ash (%)	22293	0.43 -- 7.35	3.89	1.73
Moisture (%)	25630	50.98 -- 78.85	64.92	6.97
Starch (%)	24097	19.41 -- 49.55	34.48	7.53
IVSD 7 hr. (%)	11456	69.39 -- 94.39	81.89	6.25
Sugar (%)	21583	0.01 -- 7.70	3.58	2.06
Lignin (%)	21560	1.77 -- 4.17	2.97	0.60
pH	23774	3.49 -- 4.89	4.19	0.35
Milk per ton	9997	2954.24 -- 4227.07	3590.65	318.21
kd Rate	14748	2.56 -- 4.12	3.34	0.39
Ammonia-N (%)	11482	0.28 -- 0.73	0.50	0.11
Lactic Acid (%)	11097	0.01 -- 4.97	2.24	1.37
Acetic Acid (%)	10971	0.01 -- 1.70	0.73	0.48

Shell Corn	Count	Normal Range	Average	St. Dev
Crude Protein (%)	3412	6.44 -- 10.00	8.22	0.89
AD-ICP (%)	3149	0.43 -- 0.95	0.69	0.13
ADF (%)	3183	1.32 -- 4.00	2.66	0.67
NDF (%)	3207	4.26 -- 10.72	7.49	1.61
Calcium (%)	3211	0.01 -- 0.08	0.02	0.03
Phosphorus (%)	3212	0.25 -- 0.39	0.32	0.03
Potassium (%)	3212	0.36 -- 0.54	0.45	0.04
Magnesium (%)	3212	0.10 -- 0.16	0.13	0.02
Sulfur (%)	101	0.07 -- 0.15	0.11	0.02
Manganese (ppm)	23	1 -- 18	6	6
Zinc (ppm)	23	4 -- 52	28	12
Copper (ppm)	24	1 -- 10	4	3
Iron (ppm)	23	1 -- 203	67	68
Sodium (ppm)	79	1 -- 803	223	290
Chloride (%)	47	0.01 -- 0.33	0.12	0.11
Fat (%)	2041	2.15 -- 4.85	3.50	0.67
Ash (%)	1950	0.96 -- 1.86	1.41	0.22
Moisture (%)	3725	10.54 -- 36.43	23.48	6.47
Starch (%)	3362	64.29 -- 74.99	69.64	2.68
IVSD 7 hr. (%)	782	43.22 -- 78.84	61.03	8.91
Sugar (%)	1895	1.11 -- 3.81	2.46	0.67
Lignin (%)	11	0.36 -- 3.06	1.71	0.68
pH	730	4.01 -- 5.25	4.63	0.31
Ammonia-N (%)	608	0.01 -- 0.61	0.22	0.19

Ear Corn	Count	Normal Range	Average	St. Dev
Crude Protein (%)	1279	5.99 -- 9.37	7.68	0.85
AD-ICP (%)	1228	0.48 -- 0.86	0.67	0.10
ADF (%)	1256	2.00 -- 13.36	7.68	2.84
NDF (%)	1264	5.83 -- 27.97	16.90	5.53
Calcium (%)	1255	0.01 -- 0.29	0.05	0.12
Phosphorus (%)	1255	0.23 -- 0.37	0.30	0.03
Potassium (%)	1255	0.39 -- 0.59	0.49	0.05
Magnesium (%)	1255	0.09 -- 0.17	0.13	0.02
Sulfur (%)	44	0.06 -- 0.16	0.11	0.03
Sodium (ppm)	21	69 -- 255	162	47
Chloride (%)	20	0.05 -- 0.19	0.12	0.04
Fat (%)	804	1.46 -- 4.40	2.93	0.73
Ash (%)	804	0.09 -- 3.46	1.78	0.84
Moisture (%)	1328	16.30 -- 53.02	34.66	9.18
Starch (%)	1267	50.36 -- 69.44	59.90	4.77
IVSD 7 hr. (%)	281	57.71 -- 96.07	76.89	9.59
Sugar (%)	773	0.44 -- 3.64	2.04	0.80
pH	276	3.53 -- 4.91	4.22	0.35
Ammonia-N (%)	262	0.01 -- 0.63	0.31	0.16

Small Grain / Grain Only	Count	Normal Range	Average	St. Dev
Crude Protein (%)	211	5.68 -- 20.20	12.94	3.63
AD-ICP (%)	126	0.25 -- 1.27	0.76	0.25
Crude Fiber (%)	126	0.01 -- 17.31	7.62	4.84
ADF (%)	142	0.01 -- 24.85	10.44	7.20
NDF (%)	182	0.63 -- 42.91	21.77	10.57
Calcium (%)	139	0.01 -- 0.39	0.11	0.14
Phosphorus (%)	139	0.28 -- 0.60	0.44	0.08
Potassium (%)	139	0.30 -- 0.76	0.53	0.11
Magnesium (%)	139	0.11 -- 0.23	0.17	0.03
Fat (%)	58	1.54 -- 7.82	4.68	1.57
Ash (%)	58	1.25 -- 9.25	5.25	2.00
Moisture (%)	221	1.24 -- 24.45	12.85	5.80
Starch (%)	161	20.87 -- 79.45	50.16	14.65

Small Grain Silage	Count	Normal Range	Average	St. Dev
Crude Protein (%)	3501	4.22 -- 20.26	12.24	4.01
AD-ICP (%)	3348	0.23 -- 1.51	0.87	0.32
Protein Solubility (%)	3342	20.29 -- 79.66	49.97	14.84
ADF (%)	3443	28.77 -- 48.57	38.67	4.95

NDF (%)	3479	41.85 -- 69.63	55.74	6.94
NDFd 48 (%)	1742	32.17 -- 62.75	47.46	7.64
IVTDMD 48 (%)	1742	57.56 -- 83.52	70.54	6.49
Calcium (%)	3445	0.20 -- 0.60	0.34	0.13
Phosphorus (%)	3445	0.14 -- 0.48	0.31	0.08
Potassium (%)	3445	0.71 -- 3.81	2.26	0.78
Magnesium (%)	3445	0.06 -- 0.36	0.21	0.07
Sulfur (%)	3424	0.06 -- 0.32	0.19	0.06
Manganese (ppm)	67	1 -- 116	55	30
Zinc (ppm)	67	19 -- 51	35	8
Copper (ppm)	67	5 -- 27	16	6
Iron (ppm)	67	1 -- 1996	763	617
Sodium (ppm)	365	1 -- 4233	1311	1461
Chloride (%)	333	0.01 -- 1.64	0.75	0.45
Fat (%)	2623	0.69 -- 5.09	2.89	1.10
Nitrate-N (ppm)	79	1 -- 2519	833	843
Ash (%)	2623	2.67 -- 18.48	10.57	3.95
Moisture (%)	3497	28.04 -- 78.88	53.46	12.71
Starch (%)	3317	0.01 -- 18.19	5.43	6.38
Sugar (%)	1815	0.01 -- 5.96	2.22	1.87
Lignin (%)	2585	2.79 -- 7.69	5.24	1.23
pH	3307	3.59 -- 6.13	4.86	0.63
Ammonia-N (%)	324	0.01 -- 2.16	0.84	0.66
Lactic Acid (%)	352	0.66 -- 7.10	3.88	1.61
Acetic Acid (%)	342	0.01 -- 2.93	1.37	0.78