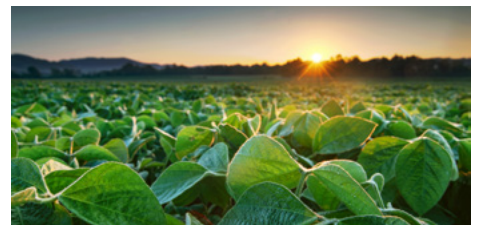
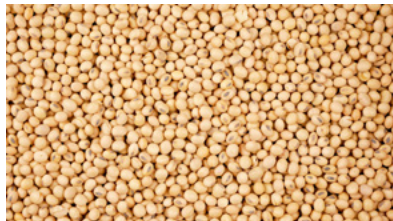


CROP REPORT 2023

AMINONIR®





Dear Customer,

Evonik Nutrition & Care is committed to providing our customers with the most comprehensive and up-to-date information on feed ingredients. As part of this commitment, we have compiled a detailed report on the amino acid, crude fat, crude fiber, sugar, starch, and ash contents of corn, soybean meal, soybean expeller, corn-based dried distillers grains with solubles (DDGS), meat and bone meal, and wheat middlings for 2023. This report includes data on corn and soybean meal segmented by region, as well as data on meat and bone meal and wheat middlings for the first time this year.

Our analysis of the 2023 corn crop revealed a slightly lower crude protein content compared to the previous year, but a higher value of starch. The amino acid profile was similar to 2022, with slightly higher ARG and lower LEU and PHE values. The 2023 soybean meal crop showed an increase in crude protein compared to the previous year, with regional differences in crude protein content. Soybean expeller had a higher crude protein value but a lower crude fat value compared to 2022. The average crude protein content for DDGS was higher in 2023 than the previous year, but the oil content was lower.

We also reported on the processing conditions of soybean meal, soybean expeller, and DDGS. Soybean meal showed very good quality with optimum values for trypsin inhibitor activity (TIA) and reactive lysine. However, there was a large variation in TIA for soybean expeller, ranging from 1.9 to

13.1 mg/g. TIA values greater than 5 mg/g could potentially impair amino acid digestibility and animal performance. There was no indication of heat damage for DDGS samples reported as the reactive lysine to total lysine ratio was between 69.5 to 81.7%.

We take responsibility for generating this report, but its success is due to the samples collected by our customers and analyzed through Evonik's AMINONIR® laboratory service. By compiling this report, we aim to provide our customers with pertinent information and insight into general trends in each year's crops. For more comprehensive feed ingredient information, please contact our Evonik technical team to access the AMINODat® 6.2 database. Thank you to our customers who participated in the 2023 Crop Report. Without your participation, this report would not be possible.

Yours sincerely,

Paulo Sergio Teixeira

Regional Vice President Animal Nutrition



Corn

AMINONIR®

Region	n	STAT	Crude Protein	Crude Fat	Starch	Sugar	Ash	Crude Fiber	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
All Regions	555	Mean (%)	7.63	3.54	64.50	1.71	1.20	1.85	0.16	0.17	0.33	0.24	0.27	0.06	0.36	0.26	0.90	0.36	0.22	0.36
		SD	0.52	0.20	0.85	0.23	0.07	0.12	0.01	0.01	0.02	0.01	0.02	0.00	0.03	0.02	0.08	0.02	0.01	0.03
		CV (%)	6.82	5.76	1.32	13.51	5.75	6.69	6.82	5.18	5.99	6.31	6.55	5.34	7.50	7.49	8.49	6.54	6.31	8.43
		Min (%)	6.38	3.00	57.90	0.80	1.10	1.50	0.13	0.15	0.29	0.19	0.23	0.05	0.29	0.21	0.71	0.30	0.18	0.28
		Max (%)	10.68	5.00	67.00	2.50	1.60	2.40	0.21	0.21	0.42	0.35	0.39	0.08	0.56	0.37	1.20	0.51	0.30	0.52
Western Corn belt (IA, KS, MN, MO, NE)	149	Mean (%)	7.91	3.50	64.22	1.70	1.20	1.85	0.16	0.17	0.34	0.24	0.28	0.06	0.37	0.27	0.94	0.37	0.22	0.38
		SD	0.62	0.23	1.00	0.19	0.07	0.11	0.01	0.01	0.02	0.02	0.02	0.00	0.03	0.02	0.09	0.03	0.02	0.04
		CV (%)	7.89	6.48	1.56	11.04	5.86	6.15	7.67	6.20	6.94	7.13	7.83	5.80	8.87	8.57	9.37	7.67	7.60	9.58
		Min (%)	6.70	3.10	57.90	1.20	1.10	1.60	0.14	0.15	0.30	0.21	0.24	0.05	0.31	0.23	0.76	0.32	0.19	0.30
		Max (%)	10.68	5.00	66.30	2.30	1.60	2.20	0.21	0.21	0.42	0.35	0.39	0.08	0.56	0.37	1.20	0.51	0.30	0.52
Eastern Corn Belt (IL, IN, OH)	35	Mean (%)	7.25	3.44	64.91	1.40	1.19	1.85	0.14	0.16	0.31	0.22	0.26	0.06	0.33	0.25	0.87	0.34	0.21	0.34
		SD	0.32	0.18	0.69	0.24	0.04	0.07	0.01	0.01	0.01	0.01	0.01	0.00	0.02	0.01	0.04	0.01	0.01	0.02
		CV (%)	4.46	5.14	1.06	16.98	3.40	3.80	4.79	3.91	4.23	4.70	4.19	4.55	6.11	4.47	4.29	4.21	4.50	4.84
		Min (%)	6.73	3.10	63.30	0.80	1.10	1.70	0.13	0.15	0.29	0.21	0.24	0.05	0.30	0.23	0.79	0.32	0.20	0.32
		Max (%)	8.07	3.80	66.20	1.90	1.30	2.00	0.16	0.18	0.34	0.25	0.29	0.06	0.38	0.28	0.96	0.38	0.23	0.39
Midsouth (AR, KY, LA, MS, OK, TN, TX)	212	Mean (%)	7.58	3.60	64.61	1.76	1.20	1.85	0.16	0.17	0.33	0.24	0.27	0.06	0.35	0.26	0.89	0.36	0.22	0.35
		SD	0.45	0.18	0.78	0.22	0.08	0.14	0.01	0.01	0.02	0.01	0.01	0.00	0.02	0.02	0.07	0.02	0.01	0.03
		CV (%)	5.91	5.03	1.21	12.45	6.26	7.57	5.94	4.72	5.39	5.80	5.51	4.94	6.32	6.50	7.68	5.64	5.47	7.26
		Min (%)	6.38	3.20	62.00	1.20	1.10	1.60	0.14	0.15	0.29	0.19	0.23	0.05	0.29	0.21	0.71	0.30	0.18	0.28
		Max (%)	9.37	4.00	67.00	2.40	1.40	2.40	0.19	0.19	0.39	0.29	0.33	0.07	0.44	0.32	1.12	0.44	0.25	0.45
Southeast (AL, GA, FL, NC, SC)	112	Mean (%)	7.57	3.56	64.33	1.63	1.21	1.88	0.16	0.17	0.33	0.24	0.27	0.06	0.36	0.26	0.88	0.36	0.22	0.35
		SD	0.36	0.21	0.71	0.18	0.06	0.12	0.01	0.01	0.01	0.01	0.01	0.00	0.02	0.01	0.06	0.02	0.01	0.02
		CV (%)	4.73	5.89	1.10	10.95	5.05	6.54	4.02	3.37	3.66	4.20	4.28	3.40	4.79	5.41	6.97	4.64	4.56	6.17
		Min (%)	6.80	3.00	62.60	1.10	1.10	1.50	0.14	0.16	0.30	0.21	0.25	0.05	0.31	0.23	0.72	0.32	0.20	0.30
		Max (%)	8.47	4.20	66.20	2.40	1.30	2.20	0.17	0.18	0.35	0.26	0.30	0.06	0.40	0.29	1.07	0.41	0.24	0.42
East Coast (PA, VA)	5	Mean (%)	6.89	3.36	65.70	1.46	1.20	1.88	0.14	0.15	0.30	0.21	0.25	0.05	0.31	0.24	0.82	0.33	0.20	0.32
		SD	0.28	0.11	0.82	0.11	0.12	0.19	0.01	0.01	0.01	0.01	0.01	0.00	0.02	0.01	0.03	0.02	0.01	0.01
		CV (%)	4.11	3.39	1.26	7.81	10.21	10.23	7.00	4.27	4.54	5.39	4.39	4.40	5.53	4.46	4.24	4.60	5.48	4.48
		Min (%)	6.60	3.20	64.60	1.30	1.10	1.70	0.14	0.15	0.29	0.20	0.24	0.05	0.30	0.23	0.78	0.31	0.19	0.31
		Max (%)	7.30	3.50	66.70	1.60	1.40	2.20	0.16	0.17	0.32	0.23	0.26	0.06	0.34	0.25	0.86	0.35	0.22	0.34
West Coast (CA, UT, CO, WA)	42	Mean (%)	7.40	3.45	64.90	1.94	1.17	1.81	0.15	0.16	0.32	0.23	0.26	0.06	0.34	0.25	0.87	0.35	0.21	0.35
		SD	0.48	0.13	0.47	0.20	0.05	0.08	0.01	0.01	0.01	0.01	0.02	0.00	0.02	0.02	0.07	0.02	0.01	0.03
		CV (%)	6.45	3.64	0.73	10.25	4.63	4.54	6.20	3.84	4.50	5.98	6.15	5.45	6.95	7.00	7.87	6.08	5.01	8.23
		Min (%)	6.63	3.20	63.60	1.60	1.10	1.60	0.14	0.15	0.29	0.20	0.24	0.05	0.29	0.23	0.77	0.31	0.19	0.30
		Max (%)	8.61	3.70	65.80	2.50	1.30	2.00	0.18	0.18	0.36	0.26	0.31	0.07	0.40	0.30	1.05	0.40	0.24	0.42

Crop Year	n	STAT	Crude Protein	Crude Fat	Starch	Sugar	Ash	Crude Fiber	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
2019	472	Mean (%)	7.23	3.47	65.87	1.85	1.16	1.76	0.15	0.16	0.31	0.23	0.26	0.06	0.34	0.25	0.86	0.34	0.21	0.35
2020	552	Mean (%)	7.37	3.47	65.07	1.66	1.18	1.79	0.15	0.16	0.32	0.24	0.27	0.06	0.36	0.25	0.87	0.35	0.21	0.36
2021	743	Mean (%)	7.37	3.47	65.01	1.64	1.18	1.87	0.15	0.16	0.32	0.24	0.26	0.06	0.35	0.25	0.85	0.35	0.21	0.35
2022	690	Mean (%)	7.67	3.46	64.39	1.70	1.19	1.85	0.16	0.17	0.33	0.24	0.27	0.06	0.35	0.26	0.92	0.36	0.22	0.37
2023	555	Mean (%)	7.63	3.54	64.50	1.71	1.20	1.85	0.16	0.17	0.33	0.24	0.27	0.06	0.36	0.26	0.90	0.36	0.22	0.36

Dry matter of corn is standardized at 88%.

	Digestibility Coefficients ¹ (%)											
	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
Swine	87	81	84	74	78	73	88	85	88	82	86	87
Poultry	94	87	91	88	86	84	89	96	92	93	95	92

¹ AMINODat® 6.2

Soybean Meal (SBM)

AMINONIR®

Region	n	STAT	Crude Protein	Crude Fat	Starch	Sugar	Ash	Crude Fiber	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
All Regions	258	Mean (%)	46.64	2.33	0.55	10.40	6.53	3.84	0.61	0.65	1.27	2.83	1.80	0.64	3.35	2.11	3.52	2.20	1.20	2.36
		SD	0.93	0.45	0.13	0.52	0.21	0.50	0.01	0.02	0.03	0.06	0.03	0.01	0.08	0.05	0.07	0.04	0.02	0.05
		CV (%)	2.00	19.52	23.03	5.04	3.22	13.02	1.94	2.49	2.09	1.96	1.93	2.02	2.31	2.20	2.13	2.01	1.89	2.32
		Min (%)	42.98	1.30	0.20	9.20	6.20	2.90	0.56	0.60	1.16	2.58	1.66	0.58	3.03	1.94	3.20	2.03	1.10	2.14
		Max (%)	48.55	3.50	1.30	11.80	7.90	6.20	0.63	0.69	1.31	2.92	1.87	0.66	3.49	2.22	3.66	2.29	1.24	2.49
Western Corn belt (IA, KS, MN, MO, NE)	122	Mean (%)	46.65	2.17	0.59	10.46	6.51	3.81	0.61	0.66	1.28	2.84	1.80	0.64	3.36	2.11	3.51	2.20	1.20	2.35
		SD	0.71	0.32	0.10	0.39	0.10	0.44	0.01	0.01	0.02	0.04	0.03	0.01	0.06	0.03	0.06	0.03	0.02	0.04
		CV (%)	1.52	14.69	16.60	3.69	1.58	11.61	1.57	1.82	1.62	1.54	1.42	1.60	1.92	1.61	1.62	1.48	1.47	1.67
		Min (%)	44.86	1.30	0.40	9.50	6.20	2.90	0.59	0.63	1.22	2.72	1.74	0.61	3.20	2.03	3.37	2.12	1.16	2.26
		Max (%)	47.88	3.20	1.00	11.40	6.80	5.00	0.63	0.69	1.31	2.91	1.84	0.66	3.47	2.17	3.62	2.25	1.24	2.42
Eastern Corn Belt (IL, IN, OH)	35	Mean (%)	46.21	2.19	0.51	10.69	6.51	4.00	0.61	0.65	1.26	2.81	1.78	0.63	3.32	2.09	3.48	2.18	1.19	2.33
		SD	0.85	0.48	0.08	0.49	0.24	0.45	0.01	0.01	0.02	0.05	0.03	0.01	0.08	0.04	0.07	0.04	0.02	0.05
		CV (%)	1.85	22.17	15.56	4.57	3.75	11.33	2.00	2.25	1.88	1.80	1.81	1.77	2.34	2.04	2.11	1.91	1.68	2.32
		Min (%)	43.01	1.50	0.20	9.60	6.20	3.20	0.56	0.60	1.18	2.59	1.66	0.59	3.03	1.94	3.20	2.03	1.11	2.14
		Max (%)	47.38	2.90	0.60	11.80	7.10	5.70	0.63	0.68	1.31	2.87	1.84	0.65	3.43	2.16	3.59	2.24	1.22	2.41
Midsouth (AR)	20	Mean (%)	47.94	3.12	0.48	9.43	6.66	3.45	0.62	0.66	1.28	2.87	1.84	0.65	3.42	2.19	3.62	2.26	1.22	2.44
		SD	0.45	0.24	0.22	0.16	0.24	0.19	0.00	0.01	0.01	0.03	0.02	0.01	0.04	0.02	0.03	0.02	0.01	0.03
		CV (%)	0.93	7.54	46.76	1.65	3.66	5.44	0.74	1.14	0.83	0.97	0.99	0.91	1.08	0.99	0.89	0.91	0.86	1.26
		Min (%)	46.86	2.60	0.30	9.20	6.20	3.20	0.61	0.64	1.26	2.81	1.80	0.64	3.34	2.14	3.54	2.21	1.20	2.38
		Max (%)	48.55	3.50	1.30	9.80	7.10	4.00	0.62	0.67	1.30	2.92	1.87	0.66	3.49	2.22	3.66	2.29	1.24	2.49
Southeast (AL, GA, NC)	56	Mean (%)	46.36	2.55	0.56	10.26	6.53	3.96	0.60	0.64	1.25	2.81	1.79	0.63	3.32	2.11	3.50	2.19	1.19	2.35
		SD	1.26	0.40	0.12	0.51	0.19	0.71	0.02	0.02	0.04	0.08	0.05	0.02	0.10	0.06	0.10	0.06	0.03	0.07
		CV (%)	2.71	15.79	22.22	4.94	2.83	17.92	2.62	3.36	2.89	2.91	2.78	2.92	3.09	2.93	2.94	2.78	2.65	3.11
		Min (%)	42.98	1.70	0.30	9.20	6.20	3.00	0.56	0.60	1.16	2.58	1.66	0.58	3.03	1.94	3.21	2.03	1.10	2.16
		Max (%)	48.43	3.30	0.90	11.20	6.90	6.20	0.63	0.68	1.31	2.91	1.87	0.66	3.45	2.20	3.65	2.28	1.23	2.46
East Coast (VA, MD.)	25	Mean (%)	46.81	2.15	0.41	10.76	6.62	3.78	0.62	0.65	1.27	2.85	1.80	0.64	3.38	2.12	3.53	2.21	1.20	2.37
		SD	0.27	0.36	0.06	0.37	0.43	0.12	0.01	0.02	0.02	0.01	0.01	0.00	0.02	0.01	0.02	0.01	0.00	0.02
		CV (%)	0.57	16.68	14.56	3.40	6.53	3.24	1.17	2.30	1.48	0.42	0.64	0.68	0.63	0.54	0.55	0.51	0.41	0.75
		Min (%)	46.04	1.80	0.30	9.80	6.30	3.50	0.60	0.61	1.22	2.82	1.77	0.63	3.32	2.09	3.48	2.18	1.19	2.31
		Max (%)	47.24	2.90	0.50	11.10	7.90	4.00	0.63	0.67	1.30	2.87	1.82	0.65	3.42	2.14	3.58	2.23	1.21	2.39

Crop Year	n	STAT	Crude Protein	Crude Fat	Starch	Sugar	Ash	Crude Fiber	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
2019	366	Mean (%)	46.66	2.15	N/A	10.11	6.40	3.88	0.62	0.66	1.28	2.86	1.80	0.63	3.38	2.10	3.52	2.21	1.20	2.35
2020	351	Mean (%)	46.20	2.46	N/A	10.16	6.33	3.98	0.61	0.66	1.26	2.81	1.79	0.63	3.34	2.08	3.49	2.19	1.19	2.34
2021	400	Mean (%)	46.63	2.25	N/A	10.36	6.66	3.77	0.61	0.66	1.27	2.85	1.81	0.63	3.39	2.12	3.53	2.21	1.20	2.37
2022	423	Mean (%)	46.12	2.26	N/A	10.86	6.50	3.82	0.61	0.65	1.26	2.83	1.79	0.63	3.32	2.09	3.49	2.19	1.20	2.34
2023	258	Mean (%)	46.64	2.33	0.55	10.40	6.53	3.84	0.61	0.65	1.27	2.83	1.80	0.64	3.35	2.11	3.52	2.20	1.20	2.36

Dry matter of soybean meal is standardized at 88%.

	Digestibility Coefficients ¹ (%)											
	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
Swine	91	85	88	90	87	89	96	90	89	90	91	87
Poultry	90	78	84	89	83	89	91	87	87	86	89	92

¹ AMINODat® 6.2

Soybean Expeller

AMINONIR®

Region	n	STAT	Crude Protein	Crude Fat	Starch	Sugar	Ash	Crude Fiber	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
All Regions	369	Mean (%)	42.13	7.96	0.51	8.32	6.15	5.69	0.57	0.62	1.16	2.57	1.61	0.57	3.05	1.89	3.15	1.97	1.08	2.10
		SD	1.16	0.98	0.29	0.92	0.53	0.65	0.01	0.02	0.03	0.08	0.04	0.01	0.12	0.06	0.09	0.05	0.03	0.07
		CV (%)	2.75	12.35	57.18	11.11	8.64	11.46	2.42	3.11	2.81	3.14	2.45	2.60	3.89	3.06	2.91	2.73	2.94	3.12
		Min (%)	38.92	5.40	0.20	5.40	5.20	3.40	0.53	0.55	1.06	2.15	1.40	0.50	2.76	1.64	2.88	1.80	0.98	1.88
		Max (%)	45.61	11.30	2.50	10.20	8.00	7.40	0.60	0.67	1.27	2.80	1.72	0.61	3.42	2.06	3.40	2.14	1.18	2.31

Crop Year	n	STAT	Crude Protein	Crude Fat	Starch	Sugar	Ash	Crude Fiber	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
2022	552	Mean (%)	41.40	8.25	N/A	8.96	5.93	5.12	0.55	0.61	1.16	2.57	1.59	0.56	3.05	1.86	3.09	1.95	1.08	2.09
2023	369	Mean (%)	42.13	7.96	0.51	8.32	6.15	5.69	0.57	0.62	1.16	2.57	1.61	0.57	3.05	1.89	3.15	1.97	1.08	2.10

Dry matter of soybean expeller is standardized at 88%.

Digestibility Coefficients ¹ (%)												
	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
Swine	90	83	86	89	86	87	93	88	87	87	90	89
Poultry	91	82	86	90	85	89	93	89	89	88	92	89

¹ AMINODat® 6.2

Dried Distillers Grains with Solubles (DDGS)

AMINONIR®

Region	n	STAT	Crude Protein	Crude Fat	Starch	Sugar	Ash	Crude Fiber	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
All Regions	42	Mean (%)	29.37	7.68	3.15	1.55	4.78	7.44	0.55	0.55	1.12	0.87	1.07	0.23	1.32	1.05	3.20	1.36	0.76	1.42
		SD	0.87	0.74	0.78	0.55	0.44	0.31	0.03	0.02	0.05	0.06	0.04	0.01	0.08	0.04	0.13	0.05	0.03	0.06
		CV (%)	2.97	9.58	24.91	35.43	9.12	4.22	4.73	4.15	4.64	6.37	3.48	4.56	5.69	3.81	3.92	3.97	4.22	4.25
		Min (%)	27.56	6.60	1.80	0.80	3.90	6.70	0.49	0.49	0.98	0.75	1.00	0.20	1.15	0.96	2.98	1.23	0.70	1.30
		Max (%)	31.15	10.10	5.00	3.30	5.30	8.10	0.61	0.61	1.24	0.96	1.15	0.26	1.48	1.15	3.48	1.48	0.84	1.57

Crop Year	n	STAT	Crude Protein	Crude Fat	Starch	Sugar	Ash	Crude Fiber	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
2019	2,745	Mean (%)	27.23	8.81	4.55	1.23	4.81	7.15	0.52	0.51	1.03	0.81	1.01	0.22	1.22	0.98	3.02	1.30	0.72	1.30
2020	1,952	Mean (%)	28.08	8.68	3.93	1.17	4.74	6.93	0.51	0.51	1.03	0.81	1.02	0.23	1.25	0.99	3.04	1.30	0.72	1.32
2021	2,533	Mean (%)	28.53	8.39	4.07	1.10	4.77	6.83	0.53	0.52	1.06	0.84	1.04	0.22	1.26	1.01	3.09	1.32	0.73	1.35
2022	1,624	Mean (%)	28.62	8.18	3.91	1.08	4.80	6.85	0.53	0.52	1.07	0.85	1.04	0.23	1.31	1.02	3.03	1.32	0.73	1.35
2023	42	Mean (%)	29.37	7.68	3.15	1.55	4.78	7.44	0.55	0.55	1.12	0.87	1.07	0.23	1.32	1.05	3.20	1.36	0.76	1.42

Dry matter of DDGS is standardized at 88%.

Digestibility Coefficients ¹ (%)												
	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
Swine	83	75	76	63	72	76	81	78	85	77	79	82
Poultry	83	78	81	61	69	81	80	77	84	75	71	78

¹ AMINODat® 6.2

Meat and Bone Meal (MBM)

AMINONIR®

Region	n	STAT	Crude Protein	Crude Fat	Ash	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
All Regions	19	Mean (%)	52.41	11.94	23.23	0.72	0.53	1.31	2.57	1.75	0.37	3.46	1.63	3.34	2.35	0.93	1.84
		SD	2.88	1.42	3.38	0.12	0.10	0.12	0.39	0.15	0.07	0.19	0.17	0.31	0.19	0.19	0.16
		CV (%)	5.49	11.91	14.56	16.34	19.09	9.22	14.99	8.55	17.54	5.49	10.55	9.22	8.27	20.35	8.46
		Min (%)	47.00	9.50	18.90	0.55	0.34	1.05	2.06	1.45	0.25	3.03	1.27	2.72	1.95	0.66	1.50
		Max (%)	55.82	15.00	31.20	0.91	0.76	1.51	3.20	1.96	0.48	3.74	1.89	3.69	2.63	1.25	2.05

Dry matter of meat and bone meal is standardized at 91 %.

	Digestibility Coefficients ¹ (%)											
	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
Swine	84	69	85	80	82	79	88	84	83	84	81	85
Poultry	72	30	58	70	63	56	76	90	71	70	71	71

¹ AMINODat® 6.2



Wheat Middlings

AMINONIR®

Region	n	STAT	Crude Protein	Crude Fat	Starch	Sugar	Ash	Crude Fiber	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
All Regions	14	Mean (%)	15.53	3.68	23.08	5.12	4.64	7.97	0.23	0.32	0.55	0.64	0.50	0.25	1.05	0.48	0.93	0.71	0.41	0.60
		SD	0.97	0.25	1.90	0.58	0.28	0.54	0.01	0.01	0.03	0.02	0.02	0.01	0.06	0.03	0.05	0.03	0.02	0.04
		CV (%)	6.26	6.76	8.23	11.23	6.02	6.79	4.77	4.58	4.80	3.78	4.07	4.02	5.63	6.31	5.89	4.71	5.14	6.97
		Min (%)	13.75	3.30	20.60	4.30	4.20	6.80	0.20	0.29	0.49	0.61	0.46	0.24	0.96	0.41	0.82	0.64	0.38	0.52
		Max (%)	17.20	4.00	26.00	6.00	5.30	8.60	0.24	0.34	0.58	0.68	0.53	0.27	1.14	0.52	1.00	0.75	0.44	0.66

Dry matter of wheat middlings is standardized at 88 %.

	Digestibility Coefficients ¹ (%)											
	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
Swine	76	72	74	46	63	73	72	72	73	62	77	73
Poultry	81	76	78	78	73	79	78	81	79	77	79	79

¹ AMINODat® 6.2

Soy Products and DDGS Quality Report

AMINONIR®

The processing conditions of soybean meal, soybean expeller, and DDGS were assessed using traditional laboratory assays, including Protein Solubility in KOH, Trypsin Inhibitor Activity and Reactive Lysine. Evonik has expanded its near-infrared spectroscopy (NIRS) portfolio to include AMINONIR® RED 2.0, a service that predicts the quality of heat-exposed soy products and corn-based DDGS based on these traditional laboratory assays. The data presented in this report was developed using the parameters predicted by AMINONIR® RED 2.0 on newly harvested soybean meal, soybean expeller, and DDGS samples in 2023.

Material	N Obs	Variable	Mean	Std Dev	CV	Minimum	Maximum
DDGS, Corn	42	Protein Solubility in KOH	33.1	3.8	11.4	27.1	41.6
		Reactive Lysine	0.7	0.1	8.8	0.5	0.8
		Reactive Lysine/Total Lysine Ratio	77.6	3.0	3.9	69.5	81.7
Soybean Meal	258	Protein Solubility in KOH	78.6	2.4	3.1	72.1	88.3
		Trypsin Inhibitor Activity (mg/g)	3.1	0.4	12.9	1.8	4.6
		Reactive Lysine	2.5	0.1	2.8	2.2	2.6
		Reactive Lysine/Total Lysine Ratio	87.9	0.8	1.0	85.6	90.2
Soybean Expeller	369	Protein Solubility in KOH	80.4	6.1	7.6	63.1	98.1
		Trypsin Inhibitor Activity (mg/g)	6.4	1.6	25.3	1.9	13.1
		Reactive Lysine	2.3	0.1	5.5	1.6	2.6
		Reactive Lysine/Total Lysine Ratio	89.7	2.4	2.7	79.9	93.8

Unit of Protein Solubility in KOH is %.
 Unit of Reactive Lysine is %.
 Unit of Reactive Lysine/Lysine Ratio is %



AMINODat® 6.0

Amino Acids Proximates Energy Minerals Fatty Acids Biogenic Amines ANF-RED Diets Recommendations

AMINO ACIDS

NAME	DM	CP	LYS	MET	CYS	M+C	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
Wheat Global, 2012-2020	88.00	12.08	0.34	0.19	0.26	0.45	0.34	0.15	0.58	0.41	0.79	0.51	0.27	0.54
Wheat Argentina, 2016-2017	88.00	12.09	0.38	0.18	0.27	0.45	0.36	0.13	0.60	0.42	0.80	0.52	0.27	0.53
Wheat Canada, 2014-2020	88.00	13.92	0.37	0.21	0.30	0.51	0.38	0.18	0.64	0.47	0.90	0.58	0.31	0.62
Wheat China, 2016-2017	88.00	13.16	0.35	0.21	0.31	0.57	0.36	0.16	0.64	0.44	0.84	0.56	0.31	0.58
Wheat Czech Republic, 2015-2019	88.00	13.17	0.35	0.20	0.28	0.46								
Wheat Denmark, 2015-2019	88.00	10.00												
Wheat Estonia, 2016-2018	88.00	13.00												
Wheat Finland, 2015-2020	88.00	15.39												

NEW!
AMINODat®
6.2 Update

**OUR EXTENSIVE WEB-BASED DATABASE FOR ANIMAL NUTRITIONISTS
 NOW WITH FRESH CROP DATA FROM THE USA!**

Our extensive nutrition database is the most comprehensive in the world and supports you in mastering the challenge of reducing costs while meeting livestock needs. It covers over 1,000 raw materials and more than 278,000 samples from all over the world, based on more than 13,000,000 analytical results.

With a new update, AMINODat® 6.2 now includes:

- State specific data for new harvest Corn and Soybean Meal in the USA:
 - 20 US States covered for Corn
 - 14 US States covered for Soybean Meal
- Fresh data sets on Bakery Meal, Corn DDGS, Meat and Bone Meal, Oats, Soybean Hulls, and Wheat Middlings sampled in the USA

This information and all technical and other advice are based on Evonik's present knowledge and experience. However, Evonik assumes no liability for such information or advice, including the extent to which such information or advice may relate to third party intellectual property rights. Evonik reserves the right to make any changes to information or advice at any time, without prior or subsequent notice. EVONIK DISCLAIMS ALL REPRESENTATIONS AND WARRANTIES, WHETHER EXPRESS OR IMPLIED, AND SHALL HAVE NO LIABILITY FOR, MERCHANTABILITY OF THE PRODUCT OR ITS FITNESS FOR A PARTICULAR PURPOSE (EVEN IF EVONIK IS AWARE OF SUCH PURPOSE), OR OTHERWISE. EVONIK SHALL NOT BE RESPONSIBLE FOR CONSEQUENTIAL, INDIRECT OR INCIDENTAL DAMAGES (INCLUDING LOSS OF PROFITS) OF ANY KIND. It is the customer's sole responsibility to arrange for inspection and testing of all products by qualified experts. Reference to trade names used by other companies is neither a recommendation nor an endorsement of the corresponding product, and does not imply that similar products could not be used.

Evonik Operations GmbH
 Nutrition & Care
 Animal Nutrition Business Line
 animal-nutrition@evonik.com
 evonik.com / animal-nutrition

