

CORN SOY REPORT 2018

AMINONIR®





Dear Customer,

In continuation of the long term commitment to our customers, Evonik Nutrition & Care has compiled a comprehensive report characterizing the amino acids, crude fat, crude fiber, sugar, and ash contents of corn, soybean meal, and corn-based dried distiller's grains with solubles (DDGS) for 2018. The data presented for corn and soybean meal are representative of the current U.S. crops and are segmented by region.

Consistent with previous years, the soybean meal from this year's crop shows significant regional differences in crude protein content, ranging from 46.5% for the Western Corn Belt to 48.7% for the Midsouth. For the 2018 soybean meal crop, the mean crude protein content of 47.0% is the highest observed since 2014.

Slight regional differences can be noted in this year's corn crop, with crude protein levels ranging from 7.3% for the Western Corn Belt to 7.7% for the Southeast. Overall, the mean crude protein content of 7.4% is slightly lower than that of the 2017 crop.

In 2018, average crude protein content for DDGS slightly increased, at 27.3%, relative to the previous four years. Statistics from the DDGS data continue to confirm that this is a highly variable ingredient.

While we take the responsibility to generate this report, we feel that what makes it so successful is that it is entirely based on samples collected by our customers and analyzed through Evonik's AMINONIR® laboratory service. By compiling the report as presented, we believe that we can provide information that is pertinent to our customers and their operations, as well as give insight into general trends that are occurring in each year's crops.

Thank you to our customers who participated in the 2018 crop report. Without your participation, this report would not be possible.

Yours sincerely,

A handwritten signature in blue ink that reads "Ken O'Halloran". The signature is fluid and cursive.

Ken O'Halloran

Regional Vice President Animal Nutrition

CORN

Region	n	STAT	Crude Protein	Oil (EE)	Starch (Ewers)	Sugar	Ash	Crude Fiber	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE	
All Regions	311	Mean (%)	7.43	3.42	65.59	1.34	1.13	1.72	0.15	0.16	0.31	0.24	0.27	0.06	0.35	0.26	0.89	0.36	0.22	0.37	
		SD	0.58	0.19	1.18	0.33	0.06	0.07	0.01	0.01	0.02	0.01	0.02	0.003	0.03	0.02	0.09	0.03	0.02	0.03	
		CV (%)	7.81	5.56	1.80	24.63	5.31	4.07	6.67	6.25	6.45	4.17	7.41	5.10	8.57	7.69	10.11	8.33	9.09	8.11	
		Min (%)	5.57	3.00	62.50	0.40	1.00	1.60	0.12	0.14	0.26	0.20	0.20	0.20	0.05	0.28	0.18	0.61	0.27	0.17	0.25
		Max (%)	9.27	4.00	68.90	2.80	1.30	2.10	0.18	0.19	0.36	0.28	0.33	0.07	0.43	0.33	1.16	0.44	0.26	0.48	
Western Corn Belt (CO, IA, MN, MO, NE, ND, SD)	178	Mean (%)	7.31	3.38	65.89	1.40	1.12	1.72	0.15	0.16	0.31	0.23	0.26	0.06	0.35	0.25	0.88	0.35	0.21	0.36	
		SD	0.65	0.18	1.26	0.34	0.05	0.07	0.01	0.01	0.02	0.01	0.02	0.003	0.03	0.02	0.10	0.03	0.02	0.04	
		CV (%)	8.89	5.33	1.91	24.29	4.46	4.07	6.67	6.25	6.45	4.35	7.69	5.00	8.57	8.00	11.36	8.57	9.52	11.11	
		Min (%)	5.57	3.00	63.30	0.40	1.00	1.60	0.12	0.14	0.26	0.20	0.20	0.20	0.05	0.28	0.18	0.61	0.27	0.17	0.25
		Max (%)	8.89	3.90	68.90	2.80	1.30	2.10	0.18	0.18	0.36	0.27	0.32	0.07	0.41	0.32	1.12	0.42	0.26	0.46	
Eastern Corn Belt (IL, IN, MI, OH, WI)	52	Mean (%)	7.48	3.45	65.62	1.21	1.15	1.72	0.15	0.16	0.31	0.24	0.27	0.06	0.36	0.26	0.89	0.36	0.22	0.37	
		SD	0.46	0.17	0.89	0.30	0.06	0.06	0.01	0.01	0.01	0.01	0.02	0.003	0.02	0.02	0.07	0.02	0.01	0.03	
		CV (%)	6.15	4.96	1.35	24.59	5.59	3.37	6.67	6.25	3.23	4.17	7.41	5.00	5.56	7.69	7.87	5.56	4.55	8.11	
		Min (%)	6.77	3.10	62.50	0.70	1.00	1.60	0.14	0.15	0.29	0.22	0.25	0.25	0.06	0.32	0.23	0.78	0.32	0.20	0.32
		Max (%)	9.27	4.00	67.40	1.80	1.30	1.80	0.18	0.18	0.36	0.28	0.33	0.07	0.43	0.33	1.16	0.44	0.26	0.48	
Midsouth (KY)	10	Mean (%)	7.62	3.49	64.98	1.39	1.10	1.71	0.16	0.16	0.32	0.23	0.27	0.06	0.36	0.26	0.94	0.36	0.22	0.38	
		SD	0.47	0.15	0.77	0.37	0.05	0.07	0.01	0.01	0.02	0.01	0.01	0.002	0.01	0.02	0.10	0.02	0.01	0.03	
		CV (%)	6.17	4.36	1.18	26.62	4.27	4.33	6.25	6.25	6.25	4.35	3.70	3.33	2.78	7.69	10.64	5.56	4.55	7.89	
		Min (%)	6.81	3.20	63.80	0.90	1.00	1.60	0.15	0.16	0.30	0.22	0.25	0.25	0.06	0.33	0.23	0.78	0.33	0.20	0.32
		Max (%)	8.29	3.70	66.20	2.20	1.20	1.80	0.18	0.18	0.35	0.24	0.30	0.06	0.38	0.29	1.06	0.39	0.24	0.42	
Southeast (GA, SC, NC)	47	Mean (%)	7.70	3.54	64.84	1.33	1.16	1.77	0.16	0.17	0.32	0.25	0.28	0.06	0.37	0.27	0.92	0.37	0.23	0.38	
		SD	0.41	0.19	0.90	0.25	0.06	0.08	0.01	0.01	0.01	0.01	0.01	0.002	0.02	0.01	0.07	0.02	0.01	0.02	
		CV (%)	5.32	5.32	1.38	18.97	5.50	4.76	6.25	5.88	3.13	4.00	3.57	3.33	5.41	3.70	7.61	5.41	4.35	5.26	
		Min (%)	6.84	3.10	62.70	0.80	1.00	1.60	0.15	0.15	0.30	0.23	0.25	0.25	0.06	0.32	0.24	0.78	0.33	0.20	0.33
		Max (%)	8.90	3.90	66.70	1.80	1.30	1.90	0.18	0.19	0.36	0.27	0.32	0.07	0.42	0.31	1.13	0.42	0.26	0.46	
East Coast (DE, MD, PA)	24	Mean (%)	7.63	3.37	65.08	1.10	1.13	1.67	0.16	0.17	0.32	0.24	0.27	0.06	0.36	0.26	0.91	0.36	0.22	0.37	
		SD	0.27	0.21	0.85	0.25	0.06	0.08	0.01	0.01	0.01	0.01	0.01	0.002	0.02	0.01	0.04	0.01	0.01	0.02	
		CV (%)	3.54	6.08	1.31	23.09	4.94	4.49	6.25	5.88	3.13	4.17	3.70	3.33	5.56	3.85	4.40	2.78	4.55	5.41	
		Min (%)	7.08	3.10	63.50	0.70	1.10	1.60	0.14	0.15	0.29	0.22	0.25	0.25	0.06	0.33	0.25	0.85	0.34	0.21	0.34
		Max (%)	8.26	4.00	66.70	1.80	1.30	1.80	0.17	0.18	0.34	0.28	0.30	0.07	0.41	0.29	0.97	0.39	0.24	0.40	
Crop Year																					
2014	566	Mean (%)	7.03	3.61	64.62	1.49	1.05	2.25	0.13	0.16	0.30	0.22	0.25	0.05	0.33	0.24	0.84	0.33	0.20	0.34	
2015	634	Mean (%)	7.37	3.70	65.35	1.43	1.19	1.90	0.15	0.17	0.32	0.22	0.27	0.06	0.33	0.25	0.92	0.35	0.21	0.36	
2016	433	Mean (%)	7.60	3.71	64.63	1.43	1.15	1.84	0.15	0.17	0.32	0.23	0.27	0.06	0.35	0.26	0.93	0.36	0.22	0.37	
2017	475	Mean (%)	7.52	3.39	65.45	1.25	1.15	1.72	0.15	0.17	0.32	0.24	0.27	0.06	0.36	0.26	0.91	0.36	0.22	0.37	
2018	311	Mean (%)	7.43	3.42	65.59	1.34	1.13	1.72	0.15	0.16	0.31	0.24	0.27	0.06	0.35	0.26	0.89	0.36	0.22	0.37	
									Digestibility Coefficients (%)												
									MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE	
									Swine	87	83	85	75	80	77	89	86	89	85	87	87
									Poultry	95	89	92	91	89	83	89	98	93	95	97	93

SOYBEAN MEAL

Region	n	STAT	Crude Protein	Oil (EE)	Sugar	Ash	Crude Fiber	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE	
All Regions	218	Mean (%)	46.98	2.16	9.96	6.62	3.77	0.62	0.67	1.28	2.90	1.82	0.64	3.41	2.12	3.55	2.23	1.21	2.38	
		SD	0.98	0.41	0.54	0.12	0.51	0.01	0.01	0.02	0.05	0.03	0.01	0.09	0.05	0.08	0.05	0.02	0.06	
		CV (%)	2.09	18.98	5.42	1.81	13.53	1.61	1.49	1.56	1.72	1.65	1.56	2.64	2.36	2.25	2.24	1.65	2.52	
		Min (%)	42.29	1.50	8.20	6.20	2.80	0.56	0.62	1.18	2.63	1.64	0.57	3.00	1.89	3.16	2.00	1.10	2.10	
		Max (%)	49.68	3.60	10.70	7.00	7.30	0.65	0.73	1.39	3.04	1.91	0.67	3.64	2.27	3.77	2.36	1.28	2.56	
Western Corn Belt (IA, KS, MN, MO, NE)	120	Mean (%)	46.47	1.96	10.27	6.62	3.89	0.61	0.66	1.28	2.89	1.81	0.63	3.36	2.10	3.51	2.21	1.20	2.34	
		SD	0.75	0.23	0.26	0.11	0.55	0.01	0.01	0.02	0.04	0.03	0.01	0.07	0.04	0.06	0.04	0.02	0.04	
		CV (%)	1.61	11.73	2.53	1.66	14.14	1.64	1.52	1.56	1.38	1.66	1.59	2.08	1.90	1.71	1.81	1.67	1.71	
		Min (%)	42.29	1.50	9.00	6.20	2.90	0.56	0.62	1.18	2.63	1.64	0.57	3.00	1.89	3.16	2.00	1.10	2.10	
		Max (%)	47.90	2.60	10.70	7.00	7.30	0.63	0.68	1.31	2.97	1.86	0.65	3.50	2.17	3.63	2.28	1.25	2.43	
Eastern Corn Belt (IL, IN, OH)	44	Mean (%)	47.46	2.19	9.65	6.66	3.77	0.62	0.67	1.29	2.93	1.84	0.64	3.46	2.15	3.59	2.26	1.23	2.41	
		SD	0.58	0.21	0.28	0.11	0.31	0.01	0.01	0.02	0.04	0.02	0.01	0.05	0.03	0.05	0.03	0.02	0.04	
		CV (%)	1.22	9.59	2.90	1.65	8.22	1.61	1.49	1.55	1.37	1.09	1.56	1.45	1.40	1.39	1.33	1.63	1.66	
		Min (%)	46.03	1.90	8.90	6.50	2.90	0.61	0.65	1.26	2.86	1.79	0.63	3.34	2.07	3.47	2.19	1.20	2.31	
		Max (%)	49.26	2.70	10.50	7.00	4.30	0.64	0.69	1.33	3.02	1.89	0.66	3.63	2.24	3.75	2.34	1.27	2.53	
Midsouth (KY)	4	Mean (%)	48.66	1.78	8.50	6.85	3.90	0.63	0.66	1.29	2.96	1.87	0.65	3.52	2.21	3.69	2.31	1.25	2.49	
		SD	0.33	0.10	0.24	0.10	0.22	0.01	0.01	0.02	0.03	0.01	0.01	0.04	0.02	0.03	0.02	0.01	0.03	
		CV (%)	0.68	5.62	2.82	1.46	5.64	1.59	1.52	1.55	1.01	0.53	1.54	1.14	0.90	0.81	0.87	0.80	1.20	
		Min (%)	48.19	1.70	8.30	6.80	3.70	0.62	0.65	1.27	2.92	1.85	0.65	3.47	2.19	3.64	2.28	1.24	2.45	
		Max (%)	48.97	1.90	8.80	7.00	4.20	0.63	0.67	1.31	2.98	1.89	0.66	3.55	2.24	3.73	2.33	1.26	2.51	
Southeast (AL, GA, NC)	31	Mean (%)	47.74	2.41	9.42	6.60	3.67	0.62	0.67	1.29	2.93	1.84	0.64	3.47	2.17	3.60	2.27	1.23	2.42	
		SD	1.22	0.28	0.70	0.10	0.44	0.01	0.02	0.03	0.07	0.04	0.01	0.10	0.06	0.11	0.06	0.03	0.08	
		CV (%)	2.56	11.62	7.43	1.52	11.99	1.61	2.99	2.33	2.39	2.17	1.56	2.88	2.76	3.06	2.64	2.44	3.31	
		Min (%)	45.79	2.00	8.20	6.40	3.20	0.59	0.64	1.23	2.82	1.78	0.62	3.30	2.08	3.46	2.18	1.18	2.32	
		Max (%)	49.68	2.90	10.50	6.80	4.90	0.64	0.70	1.34	3.04	1.91	0.67	3.64	2.27	3.77	2.36	1.28	2.56	
East Coast (MD, PA, VA)	19	Mean (%)	47.50	3.04	9.93	6.51	3.17	0.62	0.68	1.31	2.90	1.83	0.65	3.46	2.14	3.58	2.25	1.22	2.41	
		SD	0.62	0.45	0.40	0.10	0.24	0.02	0.03	0.05	0.02	0.01	0.01	0.05	0.01	0.02	0.02	0.02	0.02	
		CV (%)	1.31	14.80	4.03	1.54	7.57	3.23	4.41	3.82	0.69	0.55	1.54	1.45	0.47	0.56	0.89	1.64	0.83	
		Min (%)	46.19	2.30	9.10	6.40	2.80	0.61	0.65	1.26	2.85	1.79	0.63	3.38	2.10	3.52	2.21	1.19	2.35	
		Max (%)	48.51	3.60	10.40	6.70	3.60	0.65	0.73	1.39	2.93	1.84	0.66	3.54	2.16	3.61	2.28	1.25	2.43	
Crop Year																				
2014	432	Mean (%)	46.83	1.95	10.61	6.41	4.04	0.65	0.73	1.38	2.97	1.83	0.65	3.45	2.11	3.56	2.21	1.25	2.36	
2015	433	Mean (%)	46.51	2.05	10.61	6.40	3.70	0.63	0.68	1.31	2.87	1.81	0.64	3.41	2.12	3.56	2.21	1.22	2.37	
2016	238	Mean (%)	46.54	2.03	10.66	6.63	3.43	0.64	0.68	1.31	2.88	1.82	0.64	3.43	2.13	3.57	2.22	1.21	2.38	
2017	253	Mean (%)	46.12	2.01	10.80	6.58	3.63	0.62	0.67	1.30	2.87	1.79	0.64	3.38	2.11	3.50	2.21	1.20	2.32	
2018	218	Mean (%)	46.98	2.16	9.96	6.62	3.77	0.62	0.67	1.28	2.90	1.82	0.64	3.41	2.12	3.55	2.23	1.21	2.38	

		Digestibility Coefficients (%)											
		MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE
Swine	92	85	88	90	88	89	95	90	89	90	91	90	
Poultry	90	79	84	89	83	89	92	87	88	87	90	89	

DDGS-CORN

Region	n	STAT	Crude Protein	Oil (EE)	Starch (Ewers)	Sugar	Ash	Crude Fiber	MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE	
	1687	Mean (%)	27.28	8.81	4.87	1.36	4.58	6.96	0.51	0.51	1.03	0.80	1.00	0.21	1.18	0.97	3.02	1.30	0.72	1.29	
		SD	1.45	0.83	1.68	0.83	0.37	0.64	0.04	0.03	0.06	0.06	0.05	0.01	0.07	0.06	0.20	0.07	0.04	0.09	
		CV (%)	5.32	9.42	34.50	61.03	8.08	9.20	7.84	5.88	5.83	7.50	5.00	4.76	5.93	6.19	6.62	5.38	5.56	6.98	
		Min (%)	22.05	6.70	1.50	0.20	2.40	5.10	0.41	0.41	0.82	0.49	0.80	0.17	0.90	0.78	2.37	1.07	0.55	1.01	
		Max (%)	32.03	12.50	11.20	8.20	6.00	9.00	0.64	0.66	1.28	1.03	1.19	0.26	1.45	1.19	3.78	1.57	0.87	1.60	
Crop Year																					
2014	4684	Mean (%)	26.94	9.47	4.92	1.14	4.37	6.24	0.53	0.50	1.03	0.81	1.00	0.22	1.20	0.96	3.05	1.29	0.71	1.29	
2015	2296	Mean (%)	26.68	9.15	5.20	1.27	4.36	6.36	0.52	0.50	1.02	0.78	0.98	0.21	1.16	0.95	2.97	1.25	0.69	1.26	
2016	1008	Mean (%)	26.66	8.73	4.92	1.19	4.41	6.36	0.50	0.49	1.00	0.77	0.98	0.22	1.13	0.95	2.99	1.24	0.69	1.26	
2017	2667	Mean (%)	27.12	8.80	4.48	1.36	4.47	6.61	0.52	0.51	1.02	0.79	1.00	0.22	1.17	0.97	3.00	1.27	0.70	1.28	
2018	1687	Mean (%)	27.28	8.81	4.87	1.36	4.58	6.96	0.51	0.51	1.03	0.80	1.00	0.21	1.18	0.97	3.02	1.30	0.72	1.29	
									Digestibility Coefficients (%)												
									MET	CYS	M+C	LYS	THR	TRP	ARG	ILE	LEU	VAL	HIS	PHE	
									Swine	83	75	76	63	72	76	80	78	85	57	79	82
									Poultry	86	82	85	65	72	81	82	80	86	78	74	80

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