

U.S. SOYBEAN Meal

All Soybean Meal Is **NOT** Created Equal

It all comes down to **economics**—animal feed manufactured from U.S. dehulled soybean meal adds value to the animal's diet which equal profits to the producer, no matter whether that producer is in the U.S. or in Asia or the Middle East. Numerous feeding studies around the world have compared soybean meal from other major soybean producing countries with U.S. dehulled soybean meal. Results are consistently the same—animals perform better when their feed rations contain U.S. dehulled soybean meal compared to soybean meal from other major soybean producing countries. **The top three reasons: quality, consistency and reliability.**



Quality—U.S. dehulled soybean meal is higher in digestible amino acids and energy. Amino acids in soybean meal are the key elements for proper growth and development of animals. Of the essential amino acids that are referred to as “digestible” amino acids, there are five that are key to providing the basis for an “ideal protein concept”—*lysine, threonine, methionine, cysteine* and *tryptophan*. Ideal protein describes the profile of dietary amino acids that are in perfect harmony with the animal's nutritional requirements. U.S. dehulled soybean meal, with the ideal protein concept, outperforms competing soybean meal products.

Consistency—Soybean meal produced in the United States is usually from closely related varieties of soybeans that are processed in large state-of-the-art solvent extraction facilities with carefully controlled processing conditions. The soybean hulls, which are low in protein and low in digestibility, are removed during processing resulting in a high protein meal with 48 percent protein.

Reliability—U.S. dehulled soybean meal is delivered to markets around the globe through a variety of reliable transportation options. Efficient highway, rail and barge systems get the product from the farm, to processing plants and to export facilities under controlled environmental conditions. Ports on both the East and West coasts, and the Gulf of Mexico expedite shipments to overseas destinations.



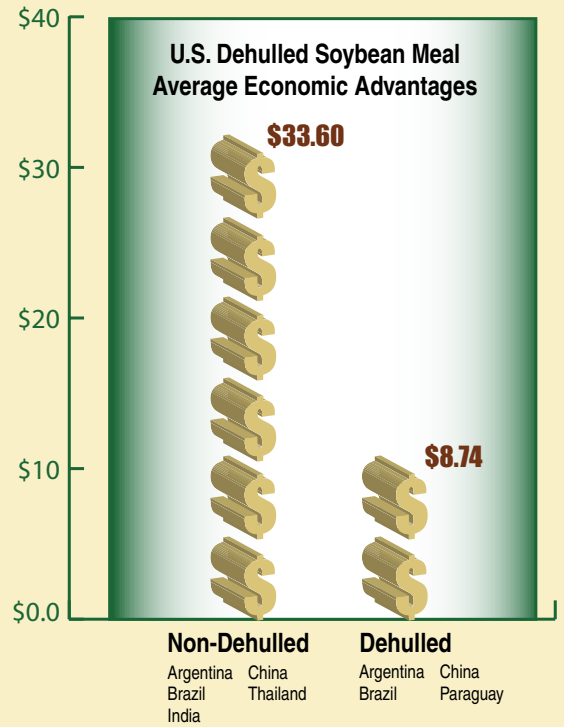
Feeding Studies Prove Economic Advantages of U.S. Soybean Meal

An 8-year series of 27 feeding studies in Asia, South America and Europe of more than 234,000 broilers, layers and swine, demonstrated the economic value of U.S. dehulled soybean meal with higher protein, amino acids, and digestibility. The studies examined the performance of animals fed various lots of soybean meal from the U.S., Argentina, Brazil, India, China, Thailand and Malaysia.

Using normalized feed ingredient prices in all studies, the U.S. dehulled soybean meal provided an economic advantage of U.S. \$33.60 more than non-dehulled soybean meal from India, Brazil, Argentina and China.

The studies also showed U.S. dehulled soybean meal had an economic advantage of U.S. \$8.74 more per metric ton than similar dehulled soybean meal produced in Argentina, Brazil, Paraguay and China.

The results show that continued use of U.S. dehulled soybean meal makes economic sense even when priced higher than other soybean meal from other origins.



Soybean meal samples from the U.S., Brazil, Argentina and India.



Value of Digestible Amino Acids

Improving Global Livestock, Poultry and Aquaculture Production

Pork—With technical assistance provided by the American Soybean Association International Marketing (ASA-IM), swine production industries around the globe use soybean meal from U.S. soybeans to greatly improve their animals' conversion efficiency. In 11 feeding studies with over 5,000 pigs, U.S. dehulled soybean meal gave better overall performance in terms of feed conversion, average daily gain (ADG) and cost per unit liveweight when compared to competitive meals from other origins. Results show that producers can save, on average, 10 percent (up to 16 percent in some cases) on their soybean meal purchases by using U.S. dehulled meal.

Poultry—Adoption of high-quality soybean meal made from U.S. soybeans enables poultry producers around the globe to improve their animals' feed conversion efficiency. In 18 studies with over 250,000 broilers and layers, U.S. dehulled soybean meal gave superior overall feed conversion body weight and cost per liveweight or eggs over competitive origin soybean meals. The results show that producers can save an average of 10 percent (up to



Global Soybean Meal Analysis

Global results indicate that protein, amino acids, and digestibility are highest in U.S. dehulled soybean meal.

In today's market of high-priced feed ingredients, the use of digestible amino acid values is an essential part of successful least cost feed formulation.

◆ Percentage nutrient content (g per 100 g) adjusted to 88% dry matter basis.

◆ Compiled values are average values (weighted by number of assays) as reported by Degussa AG (1997-2001), United Soybean Board (1998-2000), Novus International (1998-2003), and American Soybean Association (assayed at University of Missouri 1999-2003).

◆ ND = not determined.

	Dehulled			Non-Dehulled			
	U.S.	Argentina	Brazil	Argentina	Brazil	India	China
Number	1247	3	17	72	459	80	29
Moisture	12	12	12	12	12	12	12
Crude Protein	47.8	47.2	48.8	44.7	46.7	46.6	44.2
Crude Fiber	3.1	3.1	3.3	6.1	5.9	6.2	ND
Crude Fat	1.5	2.3	1.8	1.7	1.6	1.1	ND
Ash	6.4	6.6	6.2	ND	ND	7.7	ND
KOH protein solubility	86	75	80	78	81	80	ND
Urease	0.02	0.00	0.03	0.02	ND	0.03	ND
Lysine	2.99	2.86	2.91	2.73	2.83	2.80	2.68
Methionine	0.68	0.64	0.63	0.59	0.60	0.61	0.59
Cystine	0.73	0.73	0.67	0.63	0.70	0.64	0.65
M+C	1.41	1.38	1.30	1.22	1.30	1.25	1.24
Threonine	1.85	1.79	1.86	1.76	1.79	1.80	1.71
Tryptophan	0.65	0.63	0.68	0.61	0.61	0.62	0.57
Arginine	3.43	3.44	3.47	3.28	3.47	3.36	3.38
Isoleucine	2.10	2.11	2.08	2.00	2.14	2.07	1.99
Leucine	3.57	3.64	3.64	3.44	3.57	3.54	3.35
Valine	2.26	2.30	2.21	2.12	2.22	2.18	2.09
Histidine	1.22	1.25	1.30	1.23	1.24	1.26	1.17
Phenylalanine	2.33	2.41	2.41	2.28	2.42	2.35	2.21
Tyrosine	0.40	1.62	1.57	1.47	1.72	0.65	ND
Glycine	1.99	1.92	1.97	1.91	2.00	1.95	1.89
Serine	2.32	2.13	2.33	2.25	2.36	2.33	2.20
Proline	2.34	2.30	2.36	2.26	2.34	2.30	2.21
Alanine	2.02	2.01	2.05	1.94	2.03	1.99	1.87
Aspartic Acid	5.42	5.20	5.46	5.14	5.36	5.35	5.09
Glutamic Acid	8.58	8.52	8.67	8.01	8.20	8.29	7.81

50 percent in some cases) on soybean meal purchases when using U.S. dehulled meal.

Fish—More than 175 feeding demonstrations have been conducted under U.S. soybean industry international marketing programs on numerous fish species since marketing efforts began in China in the early 1990's. By offering aquafeed mills and local fish farmers a wide range of support and technical assistance, incorpora-

tion of high-quality and nutritionally balanced soy-based feeds are being rapidly adopted in regions throughout the world. Soy-based freshwater feeds developed in China yield feed conversion ratios (FCR) in the range of 0.9:1 to 1.5:1, depending on the species and life stage. Most traditional feeds in China yield an FCR of 2.0-2.5:1. The FCR of the soy-based feed is up to 250 percent lower than traditional feeds used in China, and has significantly improved fish farmer economic return.

LOOKING FORWARD

- ❑ The U. S. soybean industry is supporting research to develop value added soybean varieties with higher levels of methionine and lysine that will help lower feed costs with the next generation of soybean meal.
- ❑ Researchers hope to improve the amount of metabolizable energy and decrease phytate levels by manipulating carbohydrate levels in the meal. Lower phytate levels will also decrease the amount of supplemental phosphorus added to animal diets, which in turn decreases the amount of phosphorus released into the environment through animal manure.
- ❑ Bulk containerized shipping is providing new opportunities for smaller importers to buy direct from the United States. This provides more personalized service and flexibility in ordering product on a "just-in-time" basis.
- ❑ Increased use of soybean oil in the production of biodiesel in the U.S. will result in a greater supply of soybean meal availability for animal feed rations.
- ❑ ASA-IM animal nutrition technical experts are available for ongoing technical support.



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