Byproduct breakdown: analytical tools for soy products

DAIRYLAND
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Whether you need to optimize diet formulations, evaluate roasting quality, or verify fatty acid profiles, our soy analysis packages provide actionable insights into the composition and quality of soybeans and their byproducts.



All xml files and example reports referenced in this document can be found here:
https://dairylandlabs.com/commodities-library

Formulate according to soybean type

Making informed, cost-effective decisions starts with measuring the right factors. Book values can guide ration formulation for known soybean varieties, as natural variation is typically small. Most ration balancing platforms already include soybeans in their feed libraries, but if yours doesn't, the XML files linked above can be used as reasonable starting points for formulation inputs. Book values are type-specific and should not be applied across soybean varieties (Figure 1). The following XML files are available:

High oleic: Raw | Roasted
Conventional: Raw | Roasted

If the variety is uncertain or if you're feeding a blend of high oleic and conventional beans, testing is recommended to ensure accurate formulation and NIR analysis is the most economical way to determine fatty acid profiles. The following sample reports for soybeans are included in the link above:

NIR Packages: Basic | CNCPS 6.5+ | NASEM
Roasted soybeans: Protein dispersibility index (PDI)
Digestibility: Ross 16h RUP + Undigested CP

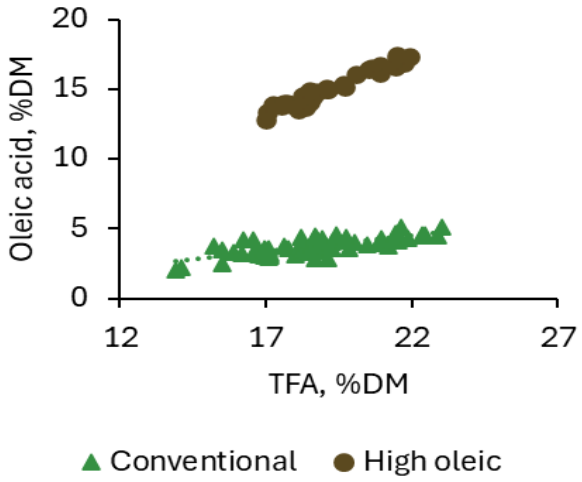


Figure 1. Although oleic acid is strongly correlated to total fatty acid (TFA) content within each soybean type, the relationship is not consistent across types

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Soybean meal is a key source of protein in livestock nutrition, but its nutrient profile isn't uniform. Processing methods like extrusion and solvent extraction cause differences in composition and digestibility.

How processing method shapes soybean meal

Extruded soybean meals tend to vary more in nutrient content than solvent-extracted meals because the conditions in extrusion are less uniform than the solvent extraction process (Figure 2). Book values for solvent-extracted and extruded soybean meals are provided for these types of soybean meals in the link above:

50 CP:	Solvent-extracted
48 CP:	Extruded | Solvent-extracted
44-46 CP:	Extruded | Solvent-extracted

Because extruded soybean meal has greater nutrient variability, NIR analysis is recommended to ensure accurate ration formulation. This approach allows you to quickly assess nutrient levels and account for batch differences, helping maintain consistent diet quality and performance. Check out these sample reports in the link above:

NIR:	Basic | CNCPS 6.5+ | NASEM
Chemistry:	Fatty acid profile

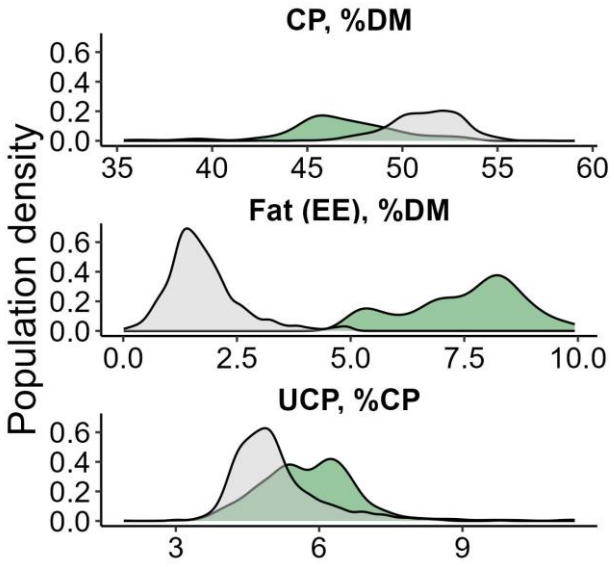


Figure 2. Extruded soybean meal has more nutrient variability and higher UCP than solvent-extracted soybean meal

Nutritional value and digestion kinetics of soy hulls

Soy hulls are an economical source of digestible fiber that can enhance energy supply in dairy rations. They are readily consumed and may replace part of the forage or concentrate in the diet. NDF digestibility (NDFD) of soy hulls is variable at 12 h but becomes consistent by the end of fermentation (Figure 3). A reference XML file for soy hulls can be found in the link above along with sample reports for:

NIR:	Basic | Select | CNCPS 6.5 | NASEM
Chemistry:	Commodity CNCPS

Questions? E-mail us at spectra@dairylandabs.com

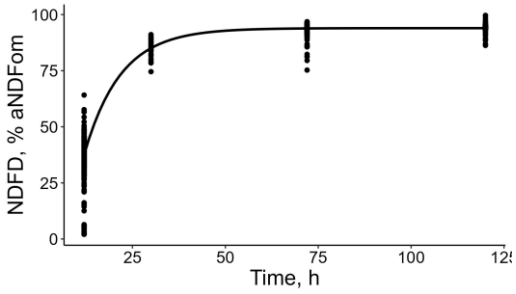


Figure 3. Soy hulls have low NDFD12h, followed by rapid and nearly complete digestion.

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Available packages for soy products

Feed type	Package	Analyses	Price	Turnaround*
Soybeans: Raw, roasted, steam flaked	NIR Basic	Moisture, crude protein, crude fiber, fat (ether extract), and total fatty acids	$23	1 day
	NIR CNCPS 6.5+ or NASEM	Moisture, crude protein, crude fiber, fat (ether extract), total fatty acids, and fatty acid profile including high oleic verification (palmitic, stearic, oleic, linoleic, linolenic)	$33	1 day
Roasted soybeans	Roasted soybean package	Moisture, crude protein, protein dispersibility index (PDI) and urease activity	$61	4-6 days
Soybean meal	NIR Basic	Moisture, crude protein, ADICP, NDICPss, ADF, NDF, fat (ether extract), and total fatty acids, ESC, WSC	$23	1 day
	NIR CNCPS 6.5+ or NASEM	Moisture, crude protein, ADICP, NDICPss, ADF, NDF, fat (ether extract), total fatty acids, , ESC, WSC, total amino acids, lysine, methionine, histidine, leucine, isoleucine, UCP (Undigested CP, Ross assay)	$33	1 day
Soybeans (all types) and soybean meal	Ross RUP	Moisture, crude protein, 16h RUP (Ruminally undegradable CP)	$70	14 days
	Ross RUP + UCP	Moisture, crude protein, 16h RUP, and UCP (Undigested CP)	$130	14 days
	Fatty acid profile	Total fatty acids, C12:0, C14:0, C16:0, C16:1, C17:0, C18:0, C18:1, C18:2, C18:3, C19:0, C20:0, C20:1, C20:2, C20:3, C20:4, C20:5, C22:0, C22:1, C22:6, C24:0, and C24:1	$84	3-5 days
Soy hulls	NIR Basic	Moisture, crude protein, crude fiber, ADF, aNDF, aNDFom, uNDFom/NDFD (240h), ether extract fat, starch, WSC, ash	$23	1 day
	NIR Select	Moisture, crude protein, crude fiber, ADF, aNDF, aNDFom, uNDFom/NDFD (30 and 240h), ether extract fat, starch, WSC, ash	$30	1 day
	NIR CNCPS 6.5	Moisture, crude protein, crude fiber, ADF, aNDF, aNDFom, uNDFom/NDFD (12, 72, 120h), ether extract fat, starch, WSC, ash	$33	1 day
	NIR NASEM	Moisture, crude protein, crude fiber, ADF, aNDF, aNDFom, uNDFom/NDFD (12, 48, 240h), ether extract fat, starch, WSC, ash	$33	1 day
	Commodity CNCPS	Moisture, aNDF, aNDFom, uNDFom/NDFD (12, 72, and 120 hours)	$107	14 days

*Turnaround time in business days

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