

# SOY

## What's The Big Deal with Toasting?

Soybeans go through a process of drying, cleaning, cracking, de-hulling, conditioning, flaking, cooking/toasting, defatting, de-solventizing and further heat treatment to produce high quality products all over the world.



The cooking/toasting process is one of the most delicate processes to get “right” – but why?



*Monogastric animals* require an enzyme called **Trypsin** to aid in protein digestion.

Soybeans have naturally occurring **Trypsin inhibitors (TI)** which, unless deactivated with heat, bind with the **Trypsin** and cause poor feed efficiency and protein digestibility issues.



In addition to Trypsin Inhibitor (TI) testing, other useful soy quality assays helpful in assessing heat treatment include:

**KOH Solubility**

**PDI (Protein Dispersibility Index)**

**Urease Activity (pH rise)**

**NSI (Nitrogen Soluble Index)**

**Heat treatment is tricky:** under-toasting soybeans can lead to poor feed efficiency due to digestibility issues, but over-toasting can lead to overall lower protein concentration and amino acid digestibility due to denaturation and/or the Maillard reaction.

Soybeans account for nearly 90% of U.S. oilseed production, and are the world's largest source of animal protein feed!