

Glossary

Aqueous extraction: Water is used as a solvent to extract water soluble compounds. Feedstuffs can be soaked in either stagnant or excess water. Duration is variable from few hours to several days.

Aqueous heat treatment: The feedstuffs are soaked in heated water. Cooking in water corresponds to the duration of heat treatment after 100° C has been reached.

Autoclaving: It is a moist heat treatment. Saturated steam is injected in a special device (autoclave) at a specified pressure with a temperature generally above 110° C. Moist, heat and pressure are the key parameters in this process.

Dehulling: It is a physical separation of the coat and the cotyledon from the seed. Manual dehulling can be dry or wet by soaking the seeds in water prior to the removal of the coat. Seeds can also be dehulled by mechanical abrasion with grinding wheels in special devices.

Extrusion: This process involves the cooking of feed ingredients in a barrel through a combination of pressure, heat, and friction. Moisture is previously added with water or steam.

Fermentation: It is an anaerobic process where bacteria and yeasts convert organic compounds (mainly carbohydrates) into simpler molecules, ethyl alcohol and carbon dioxide. Feedstuffs to be processed are inoculated with bacteria or yeasts and kept for few days at room temperature. During fermentation nutrient losses may occur but the final nutrient level is generally higher through microbial synthesis.

Fermentation with lactic acid bacteria: Lactic acid bacteria are microaerophilic (needing very little oxygen) that produce mainly lactic acid.

Heat treatment: Feedstuffs can be dry or moist heated. Dry treatments are performed in ovens, or using microwaves (microwaving) and infrared (micronization). Roasted feedstuffs are subjected to very high temperatures (>140° C). Moist heat treatments involve the use of steam and pressure (autoclaving, extrusion, pelleting), or water (heated or boiling).

Micronization: It is a dry heat process using an infrared gas generator to heat the feedstuff.

Microwaving: Microwaves are used to heat the feedstuff.

Oil extraction: Oil can be extracted from the seed by mechanical pressure and/or solvent extraction.

Reconstitution: This process involves the addition of water with a subsequent anaerobic storage for several days at a controlled temperature.

Solid state fermentation: This fermentation process is characterized by water addition limited to the saturation of the feedstuff.

Treatment with alkali: In this process, the feedstuff is soaked in an alkaline solution. Several alkalis can be used such as soda, ammonia, urea, or calcium hydroxide. Alkali treatments are often used to improve the digestibility of fibrous (high lignin content) agricultural residues intended to animal feeding.