Soybean must be processed through heat treatment in order to eliminate the anti-nutritional factors before used as animal feed. The presence of anti-nutritional factors such as tyrosine inhibitors, hemagglutinins, saponins, and allergenic factors in raw soybean affect detrimentally animal performance. There are several processing methods to reduce the levels of these anti-nutritional factors and to improve the utilization of soybeans such as cooking, infrared roasting, hot air roasting and extrusion etc.

In this work, the performance of fluidized bed and wet extrusion process in the industrial scale has been evaluated. The fluidized bed dryer involves the cooking of soybean using heated dry air with an average temperature of 164.5 °C. The soybean with an initial moisture content of 12% dry basis was dried to 1-2% dry basis with a feed rate of 2 tons/h for fluidized bed dryer. For the wet extrusion process, initial and final moisture contents are not significantly different with showing a value of 12% dry basis. The heat generated in the extruder barrel typically raises the temperature to 104-115 °C at feed rate of 1 ton/h. The qualities of soybean in terms of urease activity and protein solubility in 0.2% KOH have also been considered along with the energy consumption in each process. The urease activity, a practical indicator, is an indirect test for level of trypsin inhibitors in animal feed industries. The urease activity and protein solubility, after cooking of soybean using extrusion process, vary in the range of 0.01-0.04 and 72.8-79.3%, respectively. In case of the fluidized bed dryer, urease activity and protein solubility were given the results as 0.21-0.27 and 72.6-77.6%, respectively. In additional to the qualities as mention above, the fluidized bed drying technique has a high potential for replacing the extrusion process since it could save the investment and energy cost around 88% and 72% when the system was operated by closed loop.