

Title Seed chemical composition change during development and post-harvest processing of vegetable soybean

Author Xiaoyu Min

Citation Thesis, Master of Science (Food Science), University of Arkansas. 59 pages. 2008.

Keywords vegetable soybean; storage

Abstract

Chemical compositions of developing soybean seeds were studied, from initial seed formation to full maturation. Oil, protein, soluble sugars, starch, and minerals of soybean seeds were analyzed at an interval of 7 days. The majority of oil was formed during early seed development, whereas most protein was synthesized in the later stages. Monosaccharides and disaccharides decreased during soybean maturation, while oligosaccharides increased in the last 3 weeks before harvest. Starch was present in significant amounts in the seeds during development, but degraded to less than 1% at maturity. Phosphorus and sulfur increased throughout the soybean development, while K, Ca, Mg decreased.

Different storage conditions for storing fresh vegetable soybean and different blanching conditions were investigated to optimize post-harvest processing for the improvement of sugar compositions in vegetable soybean. Fresh vegetable soybean stored at 4°C under nitrogen atmosphere contained the highest sucrose content after storage. Water blanching of pods and steam blanching of pods or seeds at 100°C for 10 min successfully preserved the sugar composition of vegetable soybean.