Biodegradable and sustainable products are being employed to make contributions to efforts concerning environmental protection and the reduction of oil consumption. Biodegradable fibres present a simple and notable opportunity for providing sustainable textiles. Soybean fibre is a kind of regenerated and new-generation protein plant fibre. The present work aimed to analyse the many different properties of soybean fibres. Particularly it was focused on their performance, functional, comfort and dyeing properties. In literature, there are studies regarding soybean fibres but topics mostly involved the analysis of comfort properties of the fibre. In this study, fibre structure and composition, flame and UV resistance, strength, pilling behaviour, air and water vapour permeability, water absorption, drape and dyeing properties were studied. It was indicated that soybean fibre is capable of meeting the performance, comfort and functional requirements of classical and technical textile products. The fibre has many of the good qualities of natural fibres such as tenacity, moisture regain, soft-lustrous handle, dyeability and colour fastness properties, and also has some of the functional properties of synthetic fibres such as being flame retardant and anti-ultraviolet.