Commercial and semi-commercial biobased materials (Polylactate, PLA, polyhydroxybutyrate, PHB, wheat starch and corn starch) were investigated. Physical and mechanical characterisation (tensile strength, elongation, tear strength, compression, gas permeability (CO2 and O2) and water vapour permeability (WVP)) was examined. Tests on both films and cups show potential use of these materials for primary food packaging, especially PLA and PHB. An interesting O2:CO2 permeability ratio (1:7 to 1:12) was seen, which make these materials suitable for packaging of food with high respiration. The mechanical properties were comparable to conventional materials such as polyethylene (PE) and polystyrene (PS). The WVP measured on films ranged from 12.6 to 18.6 [g H2O/(m2 x 24 h)], and on cups the range was 2.2 to 10.5 [g H2O x 700 mum/(m2 x 24 h)]. The WVP for the starch-based materials seems to be the most crucial parameter, and needs improvement if these materials are to be used as food packaging.