

**COTTON GIN BYPRODUCTS: SUBSTRATE FOR ECO-FRIENDLY PACKAGING AND INSULATION
SHEETS/PANELS****Greg A. Holt****USDA-ARS, Cotton Production and Processing Research Unit****Lubbock, TX****Eben Bayer****Gavin McIntyre****Allison Poetzsch****Ecovative Design, LLC****Green Island, NY****John Wanjura****Mathew Pelletier****USDA-ARS, Cotton Production and Processing Research Unit****Lubbock, TX****Abstract**

Polystyrene is one of the most widely used plastics and is commonly produced in three forms: 1) Extruded polystyrene – disposable utensils, CD/DVD cases, yogurt containers, smoke alarm housing, etc.; 2) Expanded polystyrene foam – molded packaging materials and packaging “peanuts”; 3) Extruded polystyrene foam – insulation boards. Extruded polystyrene foam is commonly sold under the trademark name of “Styrofoam”. Polystyrene packaging and insulation is a multibillion dollar a year industry. Since polystyrene is non-biodegradable, a biodegradable material that is eco-friendly is being sought as a substitute for packaging and insulation board consumers. Ecovative Design, LLC has developed a process whereby they can produce an eco-friendly packaging and insulation board product. The purpose of this research was to evaluate the use of processed cotton burs as a substrate in Ecovative’s process. Tests were conducted to evaluate the cotton bur blend to ASTM standards as well as conventional polystyrene. Properties evaluated included: compressive strength, thermal conductivity, flexural strength, flame retardance, water vapor transmission, and mold resistance. All results have not been analyzed but those that have show the cotton bur blend to have superior strength and flame retardance properties compared to the ASTM standards and polystyrene.