The Rate of Decomposition of Compostable Packaging Products

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I was trying to determine which packaging product had the greatest rate of decomposition, out of bulrush, bamboo, sugarcane, and corn starch. I constructed 21 bins, each measuring 2' by 6". I then put 5 cups of potting soil in each bin, with the exception of the 21st bin, in which I put 10 cups of soil. Then, I placed 5 of the same 4 oz packaging cups in bins, being sure to label them with the material they contained. Each of the materials had 25 cups being decomposed in four bins with five of the same cups in each bin. I then put 5 more cups of potting soil in each bin, with the exception again of the 21st bin which already has 10 cups of soil in it. The 21st bin served as a control, so no materials were placed in it. I placed each of the bins, so they were obtaining an equal amount of sunlight. I watered each bin daily with 1L of water, and also turned the soil of each bin. I monitored the decomposition of the bins, by recording the pH, temperature, and visual decomposition each day. When composting is complete the temperature will stabilize between 26.7 and 43.3*C. The pH will be between 6.2 and 6.5 when decomposition is complete. The cups containing bulrush took, on average, 21 days to reach the pH of 6.3, the temperature of 36.2*C, and to visually decompose. Bamboo cups took, on average, 27 days to reach the pH of 6.4, the temperature of 28.1*C, and to visually decompose. The cups containing corn starch took, on average, 32 days to reach the pH of 6.2, the temperature of 30.7*C, and to visually decompose. The sugarcane cups took, on average, 36 days to reach the pH of 6.5, the temperature of 35*C, and to visually decompose. I concluded that the bulrush packaging products had the most rapid rate of decomposition, due to its optimum C:N ratio.

Awards Won: