

Effects of different temperature profiles and corn-sago starch ratios on physical properties of extruded tilapia diets

ABSTRACT

Sago starch is a locally grown and produced starch resource in Malaysia. In this study, corn starch to sago starch ratios (CS:SS) of 0:20, 5:15, 10:10, 15:5 and 20:0 were included in feed mixture to contain 20% starch and produce five isonitrogenous and isocaloric (30% crude protein and 16.7 kJ/g, respectively) tilapia *Oreochromis* sp. diets. Diets were preconditioned to contain 40% moisture and extruded using a single-screw extruder at screw speed of 120 rpm using three different temperature profiles (I 60-100-140-180°C; II 60-100-120-160°C; and III 60-120-120-180°C). Effects of these factors were evaluated on physical properties of extrudates including expansion ratio, bulk density, water stability, floatability, sinking velocity and durability. From the results, different temperature profiles and CS:SS had significant effects ($p < 0.05$) on expansion ratio and floatability. Sago starch performed as a good binder as it gave higher percentage of water stability and pellet durability. The mixture with 10:10 of corn to sago starch extruded using temperature profile II (60-100-120-160°C) produced the best extrudates with desirable physical properties.

Keyword: Aquafeed; Corn starch; Extrudates; Pellet physical properties; Sago starch; Tilapia; Temperature profiles