

ABSTRACT

PHYSICAL AND MECHANICAL TESTS OF FISH FEED MADE WITH TAPIOCA FLOUR AS ADHESIVE MATERIAL

By

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The aims of this research were to determine the effect of addition tapioca flour on the physical and mechanical properties of fish feed (pellets) for tilapia fish aging of 12 weeks old with length 10 – 12 cm. The parameters observed were profile of pellet produced, fineness modulus of fish feed raw materials, moisture content, pellet hardness, water stability of pellet, terminal velocity, pellet density, bulk density of pellet, angle of repose and pellet color. The research was done at three variations of tapioca flour addition which were of 5%, 7.5% and 10% with 10000 g weight of samples for each treatments.

The results show that the pellets produced have length of 7.5 - 8.0 mm, fineness modulus of fish feed raw materials ranging from 0.24 to 4.14, the particle size ranging from 0.11 to 1.88 mm, the moisture content of raw materials ranging from 4.24 to 8.46%, the water content of the pellets 10.21 - 12.31%, pellet hardness 5.43 - 9.63 N, water stability of pellets 6.31 - 93.7 minutes, terminal velocity of pellets 1.19 m/s – 0.0009 m/s, the density of pellets 0.71 g / cm^3 - 0.81 g / cm^3 , bulk density of pellets 0.49 g/cm^3 – 0.56 g/cm^3 , angle of repose 37.93° - 44.2° , and pellet color index: I_{red} 0.54 - 0.57, I_{green} 0.35 - 0.36 and I_{blue} 0.07-0.09. Those are not much different with the commercial fish pellets. Fish pellets with tapioca flour adhesive of 10% in the composition have better water stability and hardness compared with the commercial fish pellets.

Keywords: fish pellet , water stability, pellet hardness.

ABSTRAK

UJI SIFAT FISIK DAN MEKANIK PAKAN IKAN BUATAN DENGAN PEREKAT TEPUNG TAPIOKA

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Penelitian ini bertujuan untuk mengetahui pengaruh penambahan tepung tapioka terhadap sifat fisik dan mekanik pakan ikan buatan (pelet) yang diperuntukan bagi ikan nila berusia sekitar 12 minggu dengan ukuran panjang ikan 10 - 12 cm. Parameter yang diamati adalah profil pelet yang dihasilkan, derajat kehalusan (FM) bahan baku pakan, kadar air, kekerasan pelet, daya tahan dalam air (*water stability*) pelet, kecepatan terminal, kerapatan pelet, kerapatan curah pelet, sudut *bearing* pelet dan warna pelet. Penelitian dilakukan pada tiga variasi penambahan tepung tapioka yaitu 5%, 7,5% dan 10% dengan jumlah sampel tiap perlakuan sebanyak 10000 g.

Hasil penelitian menunjukkan bahwa profil pelet yang dihasilkan memiliki panjang 7,5 – 8,0 mm, *fineness modulus* bahan baku pakan berkisar antara 0,24 – 4,14, ukuran partikel berkisar antara 0,11 – 1,88 mm, kadar air bahan baku berkisar antara 4,24 – 8,46%, kadar air pelet ikan berkisar antara 10,21 – 12,31%, kekerasan pelet berkisar antara 5,43 – 9,63 N, daya tahan dalam air (*water stability*) pelet berkisar antara 6,31 – 93,7 menit, kecepatan terminal berkisar antara 1,19 m/s – 0,0009 m/s, kerapatan pelet berkisar antara 0,71 g/cm³ – 0,81 g/cm³, kerapatan curah pelet berkisar antara 0, 0,49 g/cm³ – 0,56 g/cm³, sudut *bearing* pelet yang dihasilkan berkisar antara 37,93° – 44,2°, indeks warna pelet yang dihasilkan tidak jauh berbeda dengan pelet ikan komersial berkisar antara I_{red} 0,54 – 0,57, I_{green} 0,35 - 0,36 dan I_{blue} 0,07 – 0,09. Pelet ikan dengan perlakuan bahan perekat tepung tapioka sebesar 10% memiliki daya tahan dalam air (*water stability*) dan kekerasan yang lebih baik dibandingkan pelet ikan yang ada di pasaran.

Kata kunci : pelet ikan, *water stability*, kekerasan pelet.