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Durability and Water Stability of Pellet Fish Supplementation Results pairing Coconut Oils and Hazlenut Oil

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Abstract— *Fish cultivation encourages increased demand for artificial feed, but information on nutritional fulfillment of pellets provided is limited. Supplement of oil in fish feeds can function to increase the energy content and as a neutral fat tangible liquid at room temperature should be noted the effect on the physical quality of fish pellets. In contrast to natural food, the physical quality of feed formulation is important in fish farming given its susceptibility to pellet degradation and leaching nutrients.*

Six treatments including control with three replicates with setup different of used of oil (coconut and candlenut oil supplement) and added Se (basal diets; mixed of oil without and added Se, coconut oil; candlenut oil added Se, and control pellet with high protein content) informulated. The type of tested feed was dry compressed pellet using pelletizer. Pellet leaching rates were used to indicate pellet water stability.

The results show that the presence of vegetable oil supplement in the diets significantly improved pellet water stability ($p < 0.05$), but the use of fat into the diet resulted in the same durability as the control diets. Used of oil supplement have higher water stability after two hours in water compared to basal pellets without fat supplements. It improved feeds water stability is one important reason why oil supplement enhances fish growth.

Keywords— *Durability, Stability, Coconut and Candlenut Oil Supplement, Nile Pellet.*

I. INTRODUCCION

Quality of pellets is one of the feed factors that can affect the performance of fish. This is because the purpose of feeding is the utilization of nutrients, while the fish live in water so as to enable the occurrence of leaching. Degradation of pellets is a measure of the quality of physical pellets in fish feeds known from the durability and stability of the pellets in water. Pellet durability is

associated with a dusty effect (fine), since the accumulation of pellet destruction will affect fish weight and feed conversion.

According to Chem and Jenn (1992), pellet stability, density, composition, and supplementation effects are the main factors determining the physical characteristics of pellets in fish feed. Furthermore, according to Jayaram and Shety (1981), the stability of the feed formulation is influenced by the composition of the feed, the type of processing, and moisture content. According to Rasyaf (1994), the use of oil as part of the formulation usually only ranges from 1-3%, because if excessive can cause the pellets back into the form of flour. Meanwhile, according to Behnke (2001), the addition of fat in high quantities more than 10% can inhibit starch gelatinization. Voragen (1995) states that Rheological properties or processes such as gelation or attachment and other properties (adhesion and cohesion) affect the formation of textures. Walter (1990) states that the fat lubrication effect on the die surface of the pellet mold causes the oil or wax to accumulate at the attachment site to create a binding effect through the necking as part of the mold. Although it can improve texture, fat as a hydrophobic compound may interfere with the binding of the water soluble component in feed (starch, protein and fiber) so that it can be detrimental to hardness and endurance of feed.

II. MATERIALS AND METHODS

The raw materials used consist of soybean meal, fish meal, polar and rice bran, and carboxy methyl cellulose. While the fat supplements used are vegetable oil from coconut and kemiri. The preparation of an oil supplement is carried out by an unheated extraction method using a coconut water solvent (coconut oil) and a hexane solvent (hazelnut oil). Before formulated, all feed ingredients are analyzed proximate first. The pellet is formulated with a protein