

The Use of the Phytase in Aquaculture, Its Zootechnical Interests and the Possibilities of Incorporation in the Aquafeed

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Abstract : The study turns on the use of the phytase in aquaculture, its zootechnical interests and the possibilities of incorporation in the feed. The goal is to reduce the waste in phosphorus linked to the feeding of fishes, without any loss of zootechnical performances and with a decrease of feed costs. We have studied the literature in order to evaluate the raw materials (total phosphorus, phytate and available phosphorus) used by a company to manufacture feed for rainbow trout; to determine the phosphorus requirements for aquaculture species; to determine the requirements of phosphorus for aquaculture species, to determine the signs of lack of phosphorus for fishes; to study the antagonism between the phosphorus and the calcium and to study also the different forms of waste for the rainbow trout. The results found in the bibliography enable us to test several Hypothesis of feed formulation for rainbow trout with different raw materials. This simulation and the calculation for wastes allowed to validate two formulation of feed: a control feed (0.5% of monocalcique phosphate) and a trial feed (supplementation with 0.002% of phytase Ronozyme PL and without inorganic phosphate). The feeds have been produced and sent to a experimental structure (agricultural college of Brehoulou). The result of the formulation give a decrease of the phosphorus waste of 28% for the trial feed compared to the feed. The supplementation enables a gain of 2.3 euro per ton. The partial results of the current test show no significant difference yet for the zootechnical parameters (growth rate, mortality, weight gain and obvious conversion rate) between control feed and the trial one. The waste measures do not show either significant difference between the control feed and the trial one, but however, the average difference would to decrease the wastes of 35.6% thanks to the use of phytase.

Keywords : phosphorus, phytic acid, phytase, need, digestibility, formulation, food, waste, rainbow trout

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