

## Utilization of Corn Meal as Black Carp (*Mylopharyngodon piceus*) Diets in Northern Upland Region of Vietnam

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### Abstract

Black carp, *Mylopharyngodon piceus* is a freshwater fish native of Northern region of Vietnam. The excellent meat flavor, nutritional value, and market demands makes the species a potential candidate for intensive fish farming. Recently, black carp has been widely introduced to the Northern upland region of Vietnam. The aim of this study was to evaluate nutritive value of corn meal (CM) derived from Thai Nguyen province, Northern upland region of Vietnam, and suitable corn meal inclusion level in diet for black carp, *M. piceus*.

The first experiment evaluated apparent digestibility coefficients (ADCs) of nutrients and energy of CM for black carp, *M. piceus* ( $78.33 \pm 2.45$ g, initial average body weight) by indirect method with chromic oxide ( $\text{Cr}_2\text{O}_3$ , 1%) as inert marker. Fish were held in 500-L composite tanks at a density of 10 fish per tank and fed with pelleted diets, including reference diet (RD, 35.12% crude protein and 10.70% crude lipid) and test diet (TD, containing of 30% corn meal plus 70% RD). Faeces were collected for 30 days using a faecal collection column attached to the tank system. The results indicated that ADCs of dry matter, crude protein, crude lipid, ash and energy of CM were high, reaching values of 88.34%, 71.17%, 65.96%, 61.85%, and 54.13%, respectively.

The 90-day growth experiment was conducted to evaluate growth performance, feed intake and feed utilization of black carp, *M. piceus* ( $30.05 \pm 0.11$ g, initial average body weight) fed four isonitrogenous (35%) and isolipidic (12%) diets where CM inclusion levels were 0, 100, 200, and 300 g/kg (abbreviated CM0, CM100, CM200 and CM300). A total of 120 black carp were reared in close re-circulating system with series of 12 composite tanks (500L each) at density of 10 individual/tank. During the experimental period, fish were fed by hand to visual satiation two times a day at 07:00 h and 17:00 h. The weight gain (WG), daily weight gain (DWG), specific growth rate (SGR) and protein efficiency ratio (PER) of black carp were similar among dietary treatments containing 0, 100 and 300 g/kg CM ( $P > 0.05$ ) and significantly higher in diet containing 200 g/kg CM ( $P < 0.05$ ). While there was no significant difference on survival rate (SR), feed intake (FI) and protein intake (PI) among four dietary treatments ( $P > 0.05$ ). Feed conversion ratio (FCR) statistically differed between CM200 and CM300 ( $P < 0.05$ ). It was included that 200 g/kg CM in diet for black carp had superior growth performance and feed utilization than diets containing 0, 100 and 300 g/kg CM, while further increasing CM inclusion of 300 g/kg caused negative effects on trial parameters.

Overall, corn meal was well digested by black carp and the suitable inclusion level of corn meal in black carp, *M. piceus* diet was 200 g/kg. These results provided useful data on practical diets for black carp by using the locally available corn meal which could be easily adopted by many smallholder fish farmers in Northern upland region of Vietnam. Transfer knowledge about present study, as well as technologies on producing, storing practical diets and feeding for black carp could help local farmers to archive better production and in turn significantly contribute to food security in the region.