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# Research on catfish... at the National Inland Fisheries Institute, Thailand

Aquaculture Department, Southeast Asian Fisheries Development Center

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## ... at the National Inland Fisheries Institute, Thailand

The hybrid of female *Clarias macrocephalus* and male *C. gariepinus*, was successfully produced by Thai biologists. The hybrids grow more quickly to marketable size than do *C. batrachus* and *C. macrocephalus*.

Studies on the nutrient requirements of the hybrid catfish are undertaken at the Division of Feed Quality Control and Development.

**Protein.** The hybrid requires approximately 40% protein for optimum growth during the fingerling stage (2-3 grams), a requirement similar to that of the male parent, *C. gariepinus*.

### Vitamin requirements for Thai walking catfish

Vitamin Species	Dietary requirement
<b>Vitamin C</b>	
<i>C. batrachus</i>	100 mg/kg <sup>a</sup>
<i>C. macrocephalus</i>	1000 mg/kg <sup>b</sup>
<b>Thiamine</b>	
<i>C. batrachus</i>	None within 24 weeks of testing
<i>C. macrocephalus</i>	None within 12 weeks of testing, but 50 mg/kg required after 18 weeks
<b>Riboflavin</b>	
<i>C. batrachus</i>	20 mg/kg <sup>a</sup>
<i>C. macrocephalus</i>	5 mg/kg <sup>c</sup>
<b>Pantothenic acid</b>	
<i>C. batrachus</i>	50 mg/kg <sup>a</sup>
<b>Pyridoxine</b>	
<i>C. batrachus</i>	20 mg/kg <sup>a</sup>
<i>C. macrocephalus</i>	5 mg/kg <sup>c</sup>
<b>Folic acid</b>	
<i>C. batrachus</i>	5 mg/kg <sup>a</sup>
<b>Niacin</b>	
<i>C. batrachus</i>	100 mg/kg <sup>a</sup>

<sup>a</sup>Tested at fixed level vs. vitamin-free diet. <sup>b</sup>Lower levels were not tested. <sup>c</sup>Graded levels tested.

**Lipids and essential fatty acids.** Recent studies on the proper carbohydrate-to-lipid ratios showed that 5.3-9.8% lipid in combination with starch (to provide estimated digestible energy of 3000 kcal/kg diet) resulted in good growth of the hybrids. The essential fatty acid requirement is probably similar to that of channel catfish. Although lacking exact information, it is wise to mix fish oil and vegetable oil at a 1:1 ratio to provide the essential  $\omega$ 3 and  $\omega$ 6 fatty acids.

**Carbohydrates.** Diets for the hybrid catfish may contain raw broken rice up to 49% of the diet without causing any harm to the fish. However, growth slowed down when raw broken rice was increased to 54% of the diet. The hybrid catfish can be fed cooked broken rice up to 35% of the diet.

**Vitamins and minerals.** The dietary requirements of the hybrid catfish and deficiency signs for some vitamins are shown below. The mineral requirements for the Thai catfish have not been determined. However, skull fractures in *C. batrachus* are often encountered and are believed to result from dietary calcium deficiency. Supplementation of feeds with bone meal corrects the problem.

Source: *NIFI Newsletter*, Vol. 3, No.2, December 1993.

### Vitamin deficiency signs in Thai walking catfish

Vitamin	Deficiency signs
<b>Thiamine</b>	None
<b>Riboflavin</b>	Cloudy lens
<b>Pyridoxine</b>	Irritability, equilibrium loss
<b>Pantothenic acid</b>	Clubbed gills, edema, fin erosion
<b>Folic acid</b>	Fading body color, pale gills and liver
<b>Niacin</b>	Spasms, whirling, equilibrium loss
<b>Vitamin C</b>	Scoliosis, darkened skin, fin erosion