

## PRACTICE ABSTRACT nº 22

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### Feed Formulation using locally available ingredients for Nile tilapia (*Oreochromis niloticus*) feeding

High prices of commercial feeds and feed ingredients has led to most fish farmers relying on locally available feed ingredients such as maize bran, kitchen leftovers, sunflower seed cake and green vegetables/weeds as supplementary feeds. However, due to poor quality and unbalanced nutrients of homemade diets, fish reared on these feeds are unable to meet their nutritional requirements, especially for protein. This causes slow growth rate which prolongs the time taken to reach market weight and consequently leads to production of small sized fish (less than 250g) at harvest (8 - 12 months). This study evaluates sunflower seed cake and Moringa oleifera leaf meal as protein sources that can substitute fish meal in Nile tilapia diets.



Experimental set up

#### EXPERIMENTAL PROCEDURE

##### Fish feed ingredients used



Moringa leaf meal



Sunflower seed cake



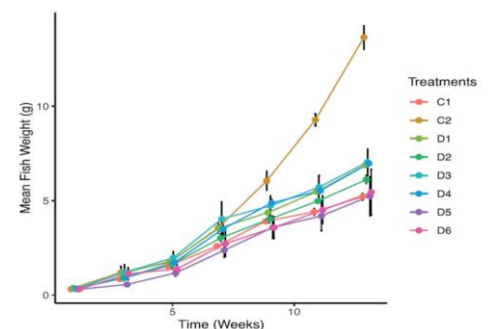
Maize and Rice bran mixture



Fish meal

##### Diet formulation using locally feeds

- The diets formulated based on fishmeal, sunflower seed cake (SSC) and moringa leaf meal (MLM) as sources of protein and maize bran and rice polishing as energy sources (see below table).
- The energy sources comprised 59% of the diet.
- The protein sources comprised 40% of the diet.
- Fish meal was replaced by MLM and SSC.
- In addition to the diets formulated using locally available feed materials, a commercial diet (C2) was added and used as the control diet and formed the 8th treatment.



Growth rate of Nile tilapia fed different diets

#### Results

Table: Proportions of ingredients in experimental diets

Ingredients	D1	D2	D3	D4	D5	D6	C1
Fish Meal	1	1	0.5	0.5	1	0.5	4
Maize	3.8	3.8	3.8	3.8	3.8	3.8	3.8
Rice	2.1	2.1	2.1	2.1	2.1	2.1	2.1
SSC	1.5	0.75	1.75	0.875	3	3.5	0
MLM	1.5	2.25	1.75	2.625	0	0	0
Mineral	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	10	10	10	10	10	10	10

- Our results revealed that fingerlings fed a diet containing fishmeal as the only protein source (diet C1) had lower growth performance, than diets D1, D2, D3 and D4 in which fishmeal was replaced with the combination of sunflower seed cake and moringa leaf meal by either 75 or 87.5%.
- The fingerlings fed diets D3 and D4 in which fishmeal was substituted with the mixture of sunflower seed cake and moringa leaf meal by 87.5% ranked second in terms of growth performance to those which were fed the commercial diet (C2).

The preliminary results have clearly demonstrated that the combination of sunflower seed cake and moringa leaf meal can substitute fishmeal in Nile tilapia diets up to 87.5% without compromising the growth.