

## THESIS

<b>TITLE</b>	Effect of enzyme(s) dose and level of non-starch polysaccharides on the performance of Nile Tilapia.
RESEACRH QUESTION	What is the effect of enzyme(s) dose and level of non-starch polysaccharides on Nile tilapia? Measuring growth, nutrient digestibility and the production of volatile fatty acids.
SUPERVISOR	Johan Schrama / Roel Maas
LOCATION	Aquatic Research Facility, Carus building/ Zodiac / Wageningen
PERIOD	Start 2017 1 <sup>st</sup> October - 1 <sup>st</sup> November, 6 months
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### **MORE INFORMATION (if available)**

<b>SHORT DESCRIPTION</b>
<p>The thesis will be part of a PhD project.</p> <p>The expected future growth of the aquaculture sector increases the pressure of using more sustainable and novel feed ingredients in aqua feeds. Plant ingredients are nowadays increasingly used to replace fishmeal to reduce cost and to be able to keep up with the increasing demand of high quality protein. However, with the inclusion of plant ingredients such as soybean and rapeseed meal, the content of non-starch polysaccharides (NSP) as well as phytate will increase in the fish feed. Both NSP and phytate are undesired in fish diets through their anti-nutritional properties. The NSP fraction generally remains undigested, as the enzymes to hydrolyse the glycosidic bonds are scarce or non-existing in fish.</p> <p>The use of enzymes like phytase, xylanase, <math>\beta</math>-glucanase in pigs and poultry is a common way to breakdown phytate and non-starch polysaccharides in order to improve the digestibility of the feed. Recently, the use of exogenous enzymes in aqua feeds is getting more attention. Multiple responses have been addressed to exogenous enzyme supplementation like improved feed intake, improved growth rate, increase in endogenous digestive enzymes and nutrient digestibility. Multiple studies have reported a dose-related increase in feed efficiency and growth with enzymes, while other studies found no response. Part of the differences observed in the various studies can be due to the extent of nutrient availability in the control diets. It seems that when the control diet is less digestible or the anti-nutritive effect is more expressed, there is a greater growth performance improvement with enzyme supplementation. Furthermore, flexibility in dosing of enzyme products is preferable to fixed doses so that effective economic optimisation of the product is possible.</p> <p>the main objective of the experiment is to assess the impact of dietary NSP level, enzyme(s) dose and their interaction. This will be done in a 6 week feeding trail using Nile tilapia. The experiment will be performed at the Aquaculture Research Facilities, Carus, Wageningen. Different dietary treatments will be tested, testing the effect of different doses of enzyme(s) and different levels of dietary NSP. Growth of the fish will be measured. Feed and collected faeces will be analysed to determine the nutrient digestibility of the experimental diets.</p>

<b>RESEARCH AIM/ SCOPE</b>
The overall aim within the project is to improve the understanding of the interplay between dietary NSP and exogenous enzymes on the fish, i.e. growth and nutrient digestibility.

<b>REQUIREMENTS</b>
<ul style="list-style-type: none"><li>• Affinity with experimental (feeding trial) and laboratory work</li><li>• Interest in fish nutrition</li></ul>

<b>OTHER INFORMATION</b>
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