

# “NÂNG CAO KHẢ NĂNG TIÊU HÓA CHO CÁ: TỐI ƯU HÓA CHI PHÍ CÔNG THỨC, CẢI THIỆN HIỆU QUẢ THỨC ĂN VÀ LỢI NHUẬN”

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*NUTRIAD INTERNATIONAL NV  
Business unit Aquaculture,*

# Solutions

- **To stimulate** digestive efficiency and performance in omnivorous fish

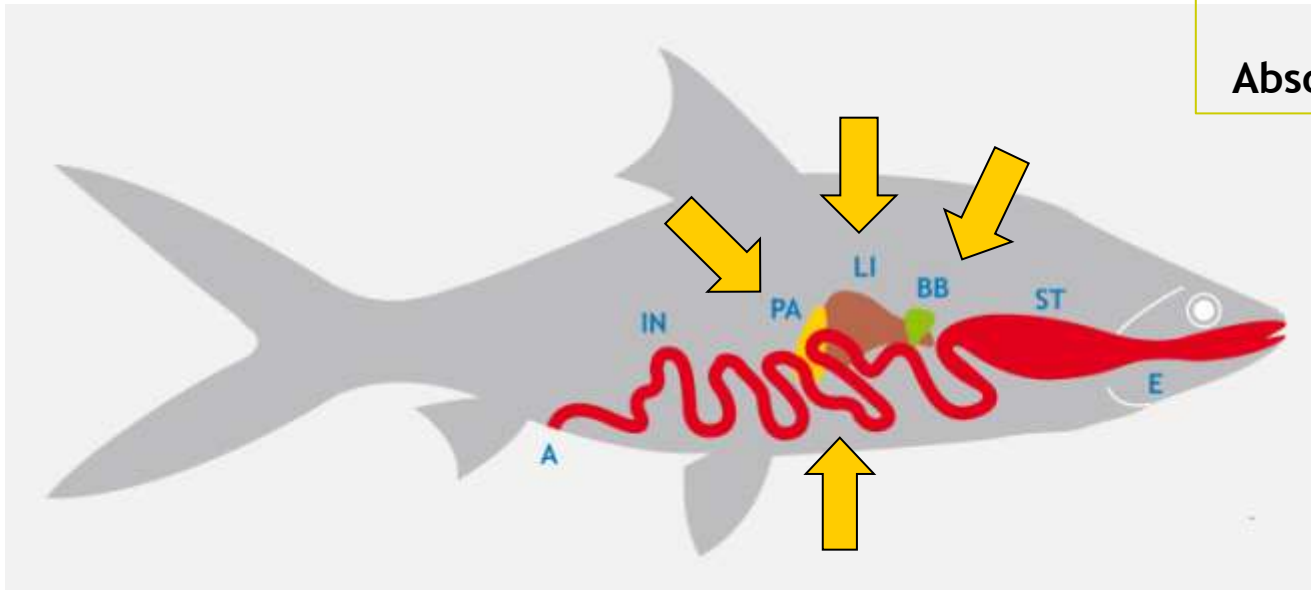
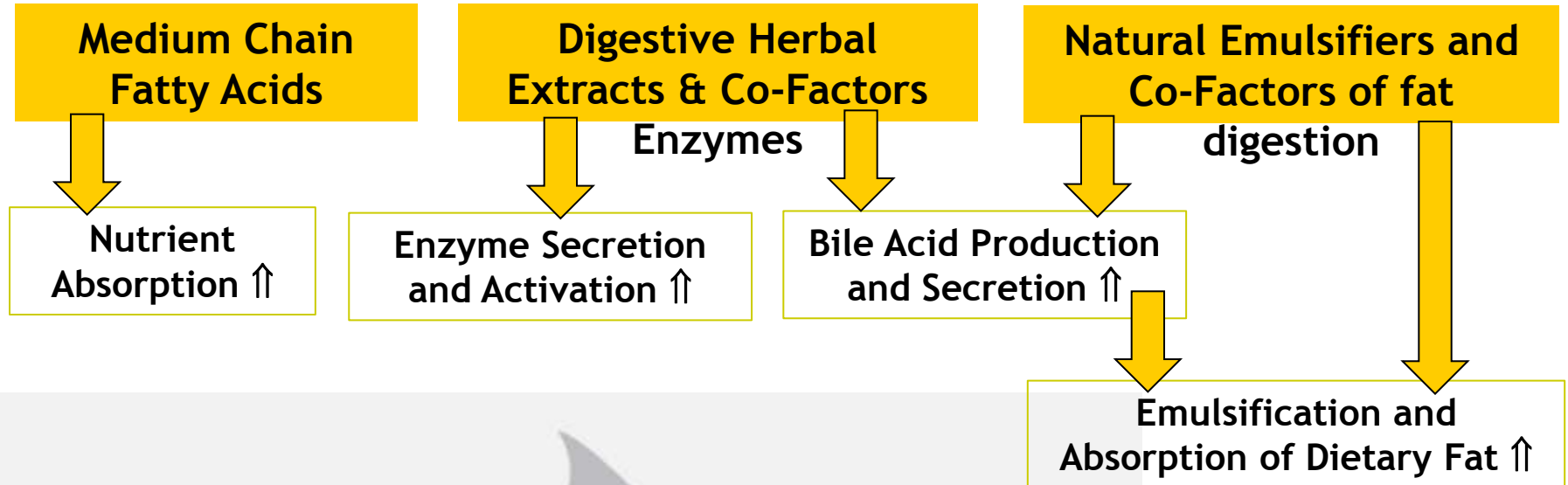


## **EASY DIGEST® OMF**

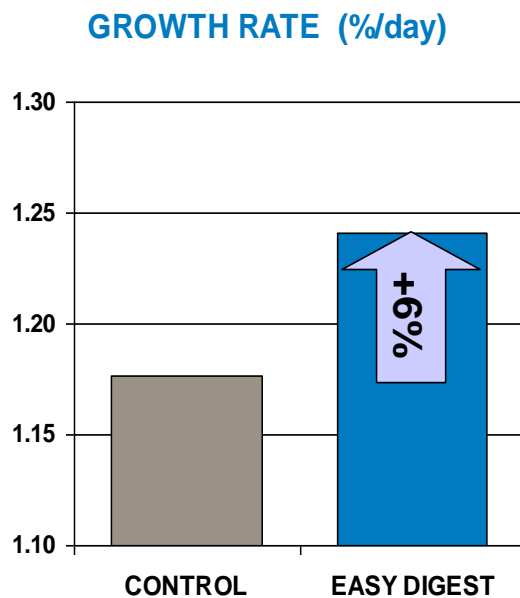
A well balanced blend of

- Digestive herbal extracts
- Natural emulsifiers
- Co-factors of fat digestion
- Medium chain fatty acids
- Trace-elements stimulating enzyme activity

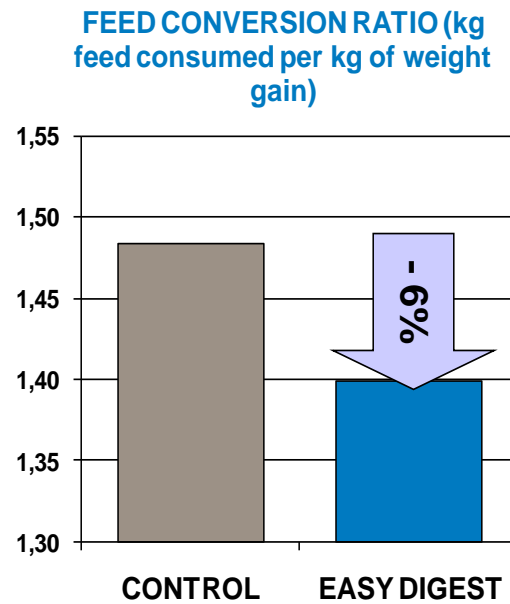
# EASY DIGEST<sup>®</sup> OMF: mode of action



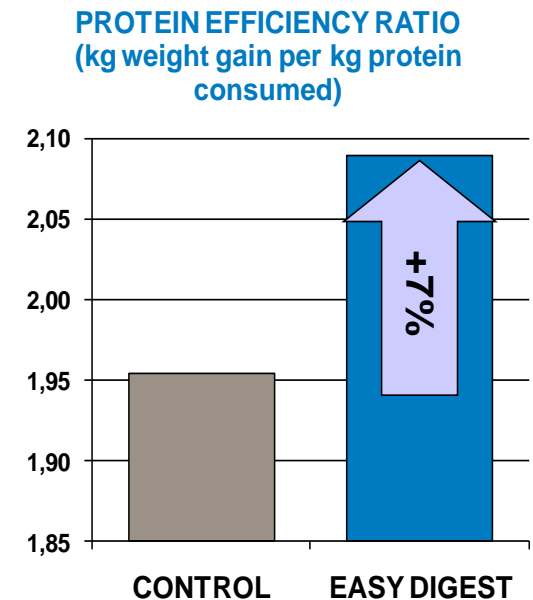
# EASY DIGEST® OMF improves FCR, Growth and PER in *Tilapia*



**EASY DIGEST**



**EASY DIGEST**



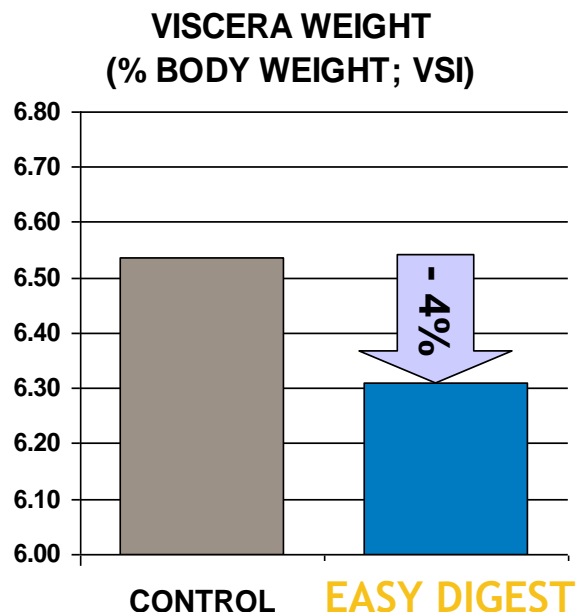
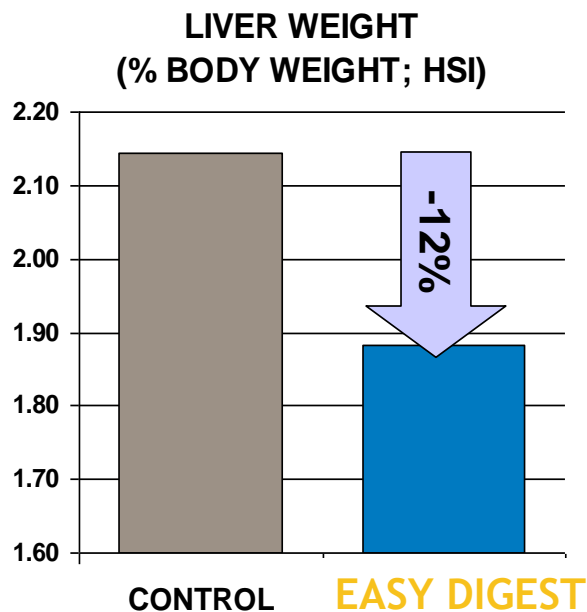
**EASY DIGEST**

Data from a 70 day lab trial with Nile Tilapia using triplicate tanks of 100l per diet.

Fish were grown at 26° C from 16g til  $\pm$  70g while fed on a practical tilapia grow out diet with CP/CF of 33/7.6.



# EASY DIGEST® OMF reduces liver and visceral weight in *Tilapia*



Data from a 70 day lab trial with Nile Tilapia using triplicate tanks of 100l per diet. Fish were grown at 26° C from 16g til  $\pm$  70g while fed on a practical tilapia grow out diet with CP/CF of 33/7.6.

# Production trial with *Pangasius hypophthalmus* (Tra) in Vietnam

Large integration in Vietnam:

1. Preliminary trial during first 3 months
2. Second set of evaluations : optimize application schedules during full cycle (6 months)

FEED TECHNOLOGY

## Optimizing the application of a novel feed additive to improve feed utilization and fillet yield in *Pangasius catfish* farming

By Alexander van Halbeek, Yu van Phong, Nguyen Van Lam, Nguyen Binh Nguyen and Peter Gesteira

The demand for quality products at low prices inevitably forces producers to reduce feed costs by using cheaper ingredients and lower feed specifications. The overall economics in pangasius catfish production can be improved with the addition of digestibility enhancing additives in the feed.

Pangasius catfish production has grown very rapidly in Vietnam to reach more than a million tonnes in recent years. This rapid growth has resulted in the industrialization of feed production as well as in culture technology. Traditionally, catfish farmers produce farm-made feeds by mixing and cooking raw materials in large kettle cookers fuelled by bio-fuel and using local raw materials. Recently, the larger integrators have installed state-of-the-art extruders from producing high volumes of feed following stringent quality control schemes and meeting international processing standards.

Since the beginning of 2009, Vietnamese farmers have been under heavy financial pressure. The farm gate price of the fish has declined to around VND 12,500-15,500 USD 0.75 is 0.8 USD), making production unprofitable. Therefore, farmers and feed producers are continuously searching for ways to improve feed performance and optimize feed yield to maintain profitability under such current market conditions.

The nutrient values of raw materials used in feeds for the Pangasius catfish are still poorly documented. Also, nutrient requirements are mostly assumed from other species of catfish or other fish water species. It is only recently that specialists have started to document the digestibility of typical raw materials used in Pangasius catfish feeds (Bao et al., 2002). However, most raw materials are known to be of poor nutritional quality (e.g. rice bran, cassava, local fish waste).

### Feed additives

In feedstock production, a wide variety of feed additives are currently being investigated to fully utilize valuable raw materials, since supplementing sub-optimal levels of nutrients as growth promoters is banned in the European Union. Alternatives to antibiotics that would have at least similar effects on growth and feed conversion without causing bacterial resistance are sought among organic acids, enzymes, probiotics, prebiotics, highly available minerals, essential oils and natural plant extracts. This active search for natural growth promoters is starting to reflect into fish farming where consumer pressure may bring about a ban on antibiotics during production in most countries.

In some recent screening work under controlled laboratory conditions at CITAric, Tarragona, Spain and at the Department of Marine Affairs and Fisheries, Sukoharjo, Indonesia, has revealed the potential of several innovative additives based on synergistic blends of digestive phytobiotics, natural emulsifying agents and co-factors of digestion for improving the feed utilization and reducing fat deposition in Nile tilapia and sea bass (Kneib et al., 2009; Gesteira et al., 2009).

Although some of these additives have the potential to improve the utilization of typical raw materials used in Pangasius catfish feed formulations, the optimal application of these novel feed additives requires field evaluations to provide information in terms of farm economics and processing qualities of the fish. This article reports on the effect of different application regimes of a novel digestibility enhancer in extruded feeds in different farms cultivating Pangasius hypophthalmus (better known as 'Tra') in the Mekong Delta.

### Field trials

The evaluations were carried out in several farm locations of Hong Hong Nam Tay Floating Joint Stock Company in the Mekong Delta. The results of two farm locations will be discussed in this article (The North and Sa Dec). These outdoor ponds of approximately 0.5-1000 m<sup>2</sup> were selected for the trial in The North, Mekong Delta. In Sa Dec, the pond size was 8,580-12,000 m<sup>2</sup>. The ponds were stocked with juvenile P. hypophthalmus with an average size of 15g at a density of 45-50 fish/m<sup>2</sup> in The North. In Sa Dec, 30g fish were stocked at 34-38 fish/m<sup>2</sup>.




# Production trial with *Pangasius hypophthalmus* (Tra) in Vietnam



# Industrial standards for Pangasius culture in Vietnam

• Average stocking density	30 - 50 pcs/sqm
• Stocking size grow-out	25 - 30 g
• Average pond size	1 hectare
• Harvesting size	1 kg
• Days of culture	200 - 250 days
• Average FCR	1.55
• Average feed cost	350 - 450 US \$/Mt
• Survival rate grow-out	95 %
• Average harvest density	300- 500 Mt/hct
• Filletting yield	2.6 - 3.0 kg/ 1 kg fillet

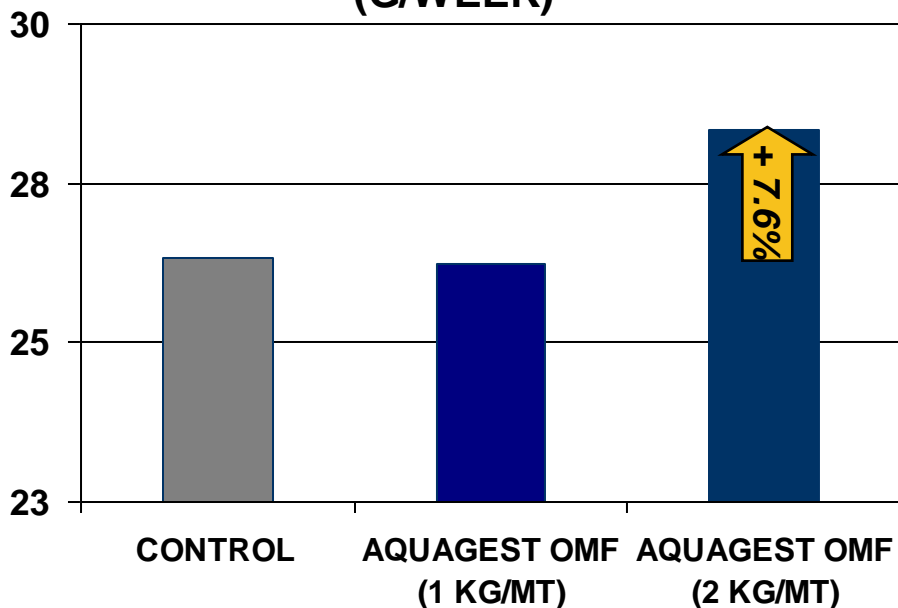




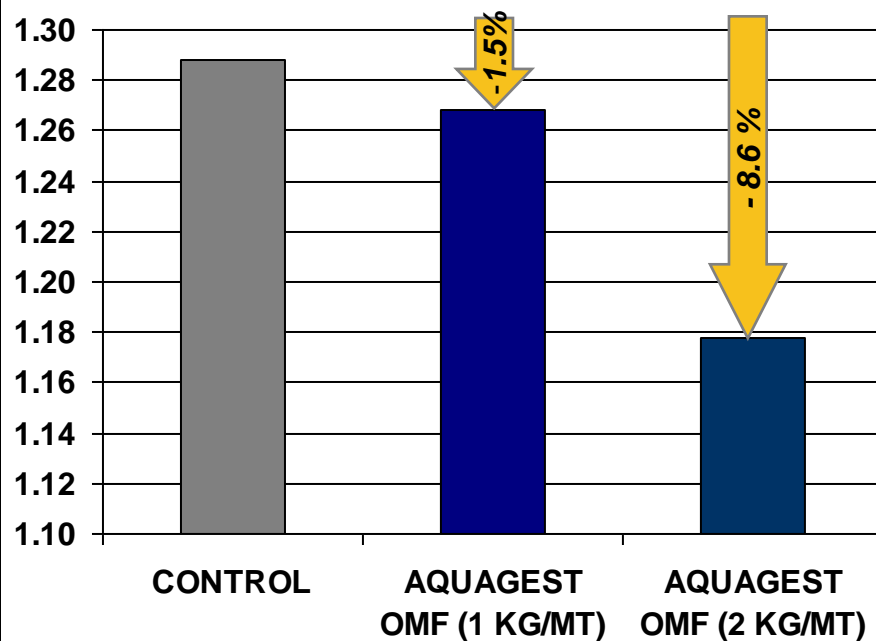
# Initial evaluation with *Pangasius* in Vietnam : improved growth & FCR

Tra Vinh farm : Initial weight 30 g, 12 wk trial, 46 pcs/sqm, 0.6 hct ponds

**AVERAGE WEEKLY GROWTH  
(G/WEEK)**

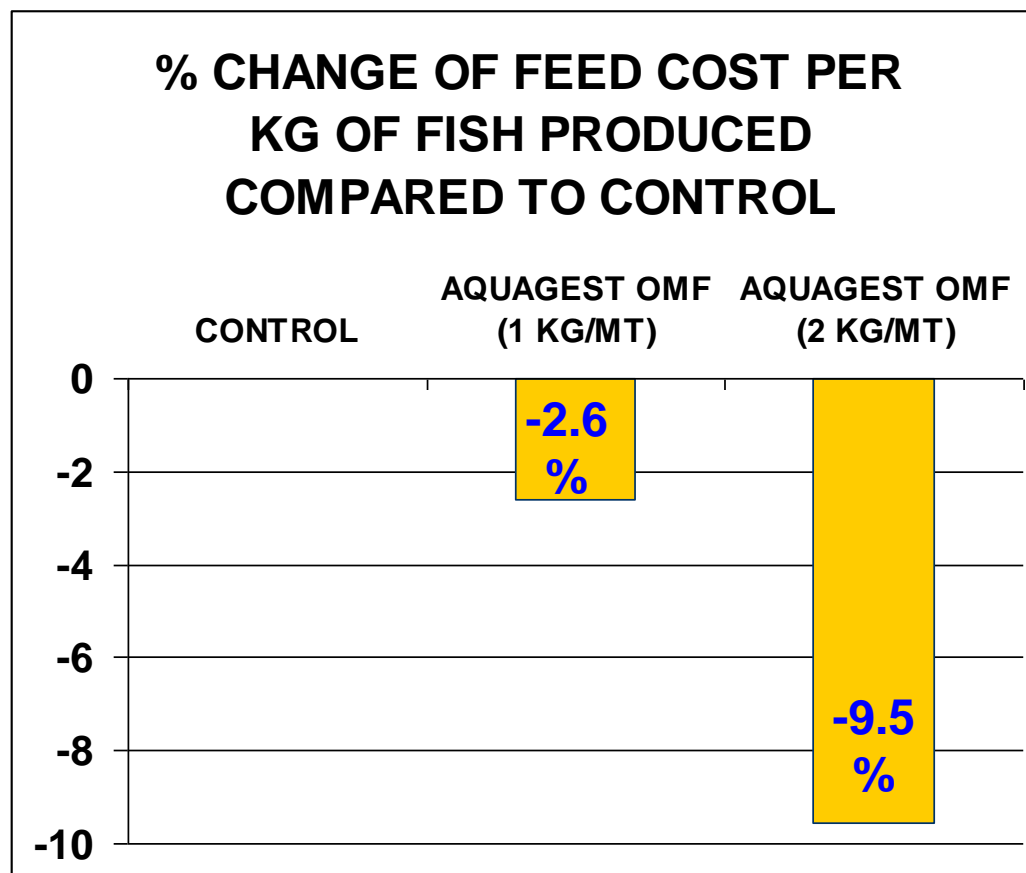


**FEED CONVERSION RATIO**



# Initial evaluation with *Pangasius* in Vietnam : improved cost-efficiency

Tra Vinh farm : Initial weight 30 g, 12 wk trial, 46 pcs/sqm, 0.6 hct ponds



# Farm evaluation with *Pangasius* in Vietnam : treatments

Fish size (g)	Feed specifications (% CP)	TREATMENTS		
		CONTROL	AQUAGEST 1	AQUAGEST 2
20 - 100	28	-	AQUAGEST® OMF 1 kg/MT of feed	AQUAGEST® OMF 2 kg/MT of feed
100 - 200	28	-	AQUAGEST® OMF 1 kg/MT of feed	AQUAGEST® OMF 2 kg/MT of feed
200 - 500	26	-	-	AQUAGEST® OMF 1 kg/MT of feed
> 500	22	-	-	-

# Farm evaluation with *Pangasius* in Vietnam : trial set-up

- standard production protocol in earthen ponds
- 2 farm sites: **Tra Vinh & Sa Dec**

Trial setup			
	Stocking density (fish/m <sup>2</sup> )	Average size of the ponds ( m <sup>2</sup> )	Stocking size (g)
Tra Vinh	45 - 50	5,500	15
Sa Dec	34 - 38	9500	30



# Farm evaluation with *Pangasius* in Vietnam : production results

## TRIAL SITE 1: Tra Vinh

Treatments	Days of culture to reach 850 g (days)	Individual fish growth rate (g/day)	FCR
Control	210	3.96	1.52
Aquagest 1	207	4.04	1.51
Aquagest 2	199 <b>(-5.2%)</b>	4.38 <b>(+10.6%)</b>	1.47 <b>(-3.3%)</b>

## TRIAL SITE 2: Sa Dec

Treatments	Days of culture to reach 850 g (days)	Individual fish growth rate (g/day)	FCR
Control	171	4.53	1.55
Aquagest 1	171	4.40	1.53
Aquagest 2	143 <b>(-16.4%)</b>	5.20 <b>(+14.8%)</b>	1.50 <b>(-3.2%)</b>

# Farm evaluation with *Pangasius* in Vietnam : Benefit for the farmer

## 1. 1.4-2.4 % reduction of feed cost per kg of whole fish

FEED COST PER KG OF WHOLE FISH		
	Feed cost difference per kg of whole fish (as % compared to control)	
TREATMENT	Trà Vinh	Sa Dec
CONTROL	Reference	Reference
AQUAGEST 1	-0.7 %	-0.2 %
AQUAGEST 2	-2.4 %	-1.4 %

## 2. 5-16.4 % shortening of the production cycle

# Farm evaluation with Pangasius in Vietnam : Benefit for the fillet processor

## 3. 7.4-7.5% improved filleting ratio

Processing results from Sa Dec trial (in % compared to control)			
Treatments	Fillet ratio (kg whole fish needed for 1 kg of fish fillet)	Cost of 1 kg fillet (VND)	Gain per kg of fillet calculated on whole fish (VND)
CONTROL	2.16	30,240	
AQUAGEST 1	2.06 (- 4.6 %)	28,840	1,400
AQUAGEST 2	2.00 (- 7.4 %)	28,000	2,240

Processing results from Trà Vinh trial (in % compared to control)			
Treatments	Fillet ratio (kg whole fish needed for 1 kg of fish fillet)	Cost to produce 1 kg of fillet out of whole fish (VND)	Gain per kg of fillet calculated on whole fish, (VND)
CONTROL	2.14	29,960	
AQUAGEST 1	2.09 (-2.4 %)	29,260	700
AQUAGEST 2	1.98 (-7.5 %)	27,720	2,240

## Benefits - What to expect ?

### EASY DIGEST® OMF

- Stimulating digestive & feed utilization efficiency
- Complement fat digestion/absorption processes
- Improving conversion of nutrients/energy into meat
- Improving fileting yield



**GET MORE OUT OF YOUR FEED INGREDIENTS**



# EASY DIGEST® OMF - Feed Application

EASY DIGEST® OMF is stable during processing and can be applied directly into the mixer

**1) Top-up boost to improve growth, food conversion and filleting yield:**

- ✓ Starter/Pre-grower feeds: 1.5-2.5 kg per MT (fish <200 g)
- ✓ Grower feeds: 1-1.5 kg per MT (fish >200 g)

# EASY DIGEST<sup>®</sup> OMF - Feed Application

## 2) Optimize formulation cost

Inclusion: 1-2 kg/MT feed

### Benefits:

- ✓ Reduce digestible protein & energy (maintaining essential amino acid balance)
- ✓ Reduce nutrient density (maintaining nutrient balance)



THANK YOU