



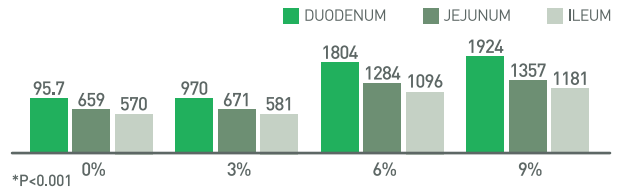
X•SOY 600 guarantees intestinal quality of chicks on behalf of an excellent balance of high digestible protein & amino acids, and also due to reduction of allergenic and antinutritional factors of soybeans.

## Trial results



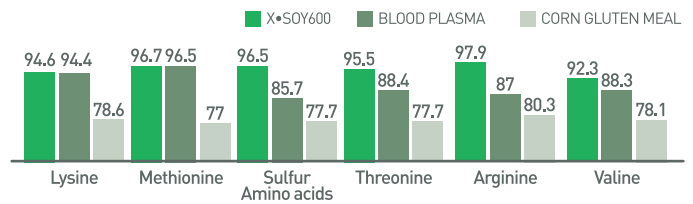
### IMPROVED INTESTINAL INTEGRITY IN COMPARISON TO CONVENTIONAL SOYBEAN MEAL

Villus height \*(µm) at different inclusion rates of X•SOY 600[%]<sup>1</sup>



### HIGHER AMINO ACID DIGESTIBILITY THAN OTHER PROTEIN SOURCES

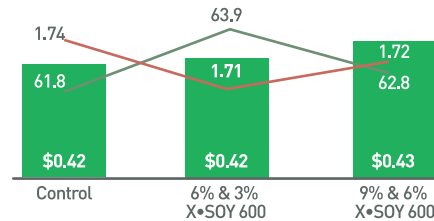
Amino acid standardized ileal digestibility [%] - 7day broiler chicks<sup>2</sup>



### X•SOY 600 BETTER PERFORMANCE & PRODUCTION COST

Feed cost \$/kg weight gain and performance of 44 day-old broilers. Diets with different X•SOY 600 inclusion rates<sup>3</sup>

■ Feed cost usd/kg weight gain ■ FCR : feed conversion ratio ■ ADG : average daily gain (g/d)



• Control no X•SOY 600. • 6% & 3% XSOY 600 { 6% : [1-11d of age] 3% : [12-21d of age] • 9% & 6% XSOY 600 { 9% : [1-11d of age] 6% : [12-21d of age]

## Specification

Amino acid	Total	Digestibility	Amino acid	Total	Digestibility
Lysine	3.87%	94.6%	Tryptophan	0.81%	96.3%
Methionine	0.85%	96.5%	Arginine	4.59%	98.0%
Sulfur amino acids	1.77%	96.6%	Valine	3.01%	92.4%
Threonine	2.47%	95.5%			

Energy	Kcal/kg
Metabolizable	2635

<sup>1</sup> Vasconcellos, LG et al. Use of soy protein concentrate in pre-starter and starter diets for broiler. fiev, Bras, Avic, Campinas, v 19, p. 1-8 Jan. 2017  
<sup>2</sup> FORTES, B.D.A Adicao de enzimas em dietas com diferentes fontes de proteinas para frangos. PHD Thesis. 102p. UFG. 2014.  
<sup>3</sup> Field trial Poultry performance assay. CJ Selecta internal report. 2017.



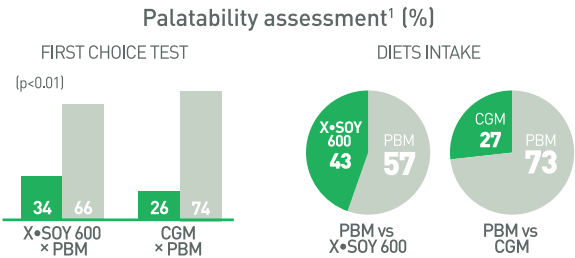
# X•SOY 600™

X•SOY 600 is a safe protein source with minimum antinutritional and allergenic factors.

## Trial results

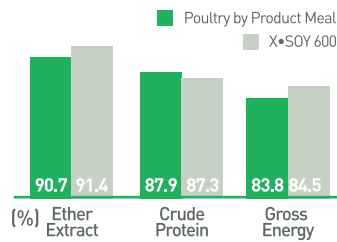


### EXCELLENT ATTRACTIVENESS & CONSUMPTION OF X•SOY 600 DIETS



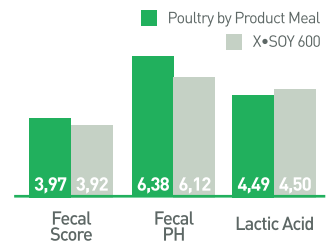
### X•SOY 600 HIGH DIGESTIBLE PROTEIN

Total apparent digestibility coefficient<sup>2</sup>



### GOOD PALATABILITY & FECAL QUALITY<sup>1</sup>

Fecal traits (mmol/Kg MS)



### X•SOY 600 HAS GOOD FUNCTIONALITY IN EXTRUSION PROCESS

Favoring kibble expansion and starch cooking<sup>2</sup>

	X•SOY 600 Inclusion rate				
	PBM	CGM	6,25%	12,5%	18,75%
Specific density (g/mm <sup>2</sup> )	0,46	0,46	0,46	0,43	0,40
Specific length (cm/g)	1,50	1,49	1,55	1,52	0,40
Starch gelatinization (%)	74,8	74,3	80,2	85,2	0,40
Radial expansion rate (g/mm <sup>2</sup> )	11,5	11,7	11,3	12,2	12,6

## Specification

Amino acid	Total	Amino acid	Total
Lysine	3.87%	Tryptophan	0.81%
Methionine	0.85%	Arginine	4.59%
Sulfur amino acids	1.77%	Valine	3.01%
Threonine	2.47%		

Energy	Kcal/kg
Metabolizable	3778

<sup>1</sup> VENTURINI K.S. Fontes proteicas nao convencionais em alimentos para caes e gatos. PHD thesis, 113p. UNESP, 2016.

<sup>2</sup> VENTURINI K.S. et al. Processing trains and digestibility of extruded dog foods with soy protein concentrate.

In: European Society of Veterinary and Comparative Nutrition, 2016, Berlín.

<sup>3</sup> European Society of Veterinary and Comparative Nutrition, 2016.



# X•SOY 600™

X•SOY 600 is highly safe protein source, ideal for sustainable fish farming. reduced antinutritional and allergenic factors contribute for a better growth performance and to an Eco-friendly fish farming.

- Renewable Protein Source
- Reliable Ingredient
- Steady Supply • Eco-Friendly

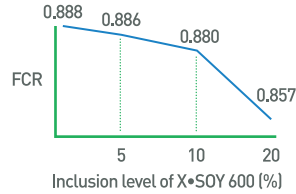
## Trial results



### HIGHERST LEVEL OF DIET FOR BEST PERFORMANCE AND TOTAL REPLACEMENT OF FISHMEAL

#### Atlantic salmon

Feed conversion ratio in Atlantic salmon fed with increasing levels of X•SOY 600

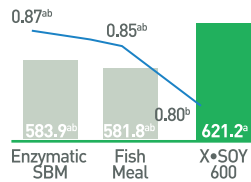


#### Test conditions

- Initial body weight 6.4±1.6g, 100fish/tank in freshwater recirculating system at 14°C
- Diets with fixed levels of fishmeal and poultry by product meal(15% & 20%, respectively)

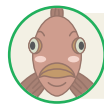
#### Rainbow trout

The effect primary protein source on feed conversion ratio(FCR), percent gain of initial weight of rainbow trout for, 12 weeks



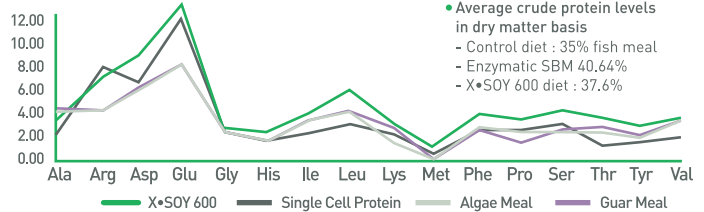
#### Experimental diets

- 100% of fishmeal replaced by vegetable source
- Inclusion levels
  - Control diet : 35% fish meal [CP 62%]
  - Enzymatic SBM 40.64% [CP 55%]
  - X•SOY 600 diet : 37.6% [CP 60%]

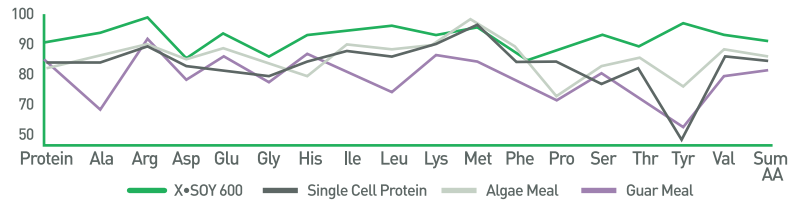


### SUPERIOR AMINO ACID CONTENT AND DIGESTIBILITY

#### Amino acid content (% DM basis)



#### Digestibility coefficient (%)



## Specification

Protein (CP) %	Amino acid	Total	Digestibility	Amino acid	Total	Digestibility
CP(dry matter) 65%	Lysine	3.87%	93.8%	Tryptophan	0.81%	84.1%
CP(as is) 60%	Methionine	0.85%	97.6%	Arginine	4.59%	99.1%
CP(digestibility) 90%	Histidine	1.67%	91.6%	Valine	3.01%	93.0%
	Threonine	2.47%	87.9%			

Energy Kcal/kg
Digestible 2984

<sup>1</sup>Source : Database of Nutrient Digestibility's of Traditional and Novel Feed Ingredients for Trout and Hybrid Striped Bass. This is a collaborative project among USDA Agricultural Service National Program. Spreadsheet version 2017.



# X•SOY600™

X•SOY 600 is sustainable nutrition for shrimp farming.

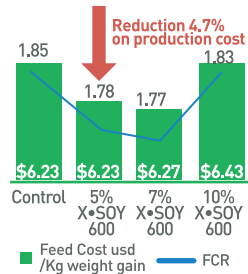
- Highly Digestible
- Eco-Friendly
- Excellent performance
- Stable Supply
- Economical
- No seasonal fluctuation

## Trial results



### REDUCED PRODUCTION COSTS

Evaluation of performance of shrimp (*Litopenaeus vannamei*) using X•SOY 600 diets in fishmeal replacement<sup>1</sup>



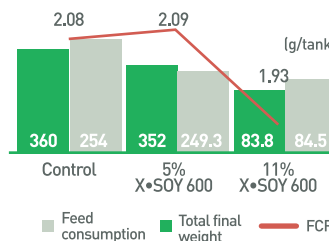
#### Test conditions

- Initial body weight 1.82±0.18g. (n=800;p<0.05 - ANOVA) -Indoor system = 70 shrimp/m<sup>2</sup> -500L /tank-24h-period of continuous flow of renewal and filtration water system.
- Best economic outcome - 5% X•SOY 600
- Best technical performance - 7% X•SOY 600



### BETTER TECHNICAL AND ECONOMICAL PERFORMANCE

Evaluation of soy protein concentrate to formulate shrimp diets, *Litopenaeus vannamei*, with nutritional commercial profile<sup>2</sup>



#### Test conditions

- X•SOY 600 replaced local fish meal(Thailand) at ratio of 25.50 & 75%. Body weight = 2.84g ; 30shrimp randomly allocated in 30 tanks(6tanks per treatment). The experiment was conducted in 150 liters tanks at an indoor system. Shrimp were fed four times per day to satiety.

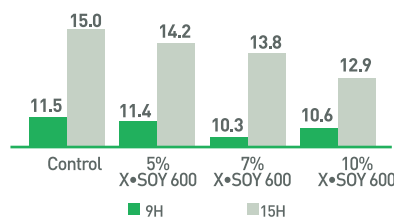
#### Trial conclusion

- 5.8% reduction of feed intake
- 7.2% reduction of feed conversion ratio(FCR)



### NATURAL ECO-FRIENDLY AND COST EFFECTIVE

Evaluation of soy protein concentrate use in pellet water stability<sup>3</sup>



#### Trial conclusion

- X•SOY 600diets benefit pellet stability with less dry matter loss

## Specification

Amino acid	Total	Amino acid	Total
Lysine	3.87%	Tryptophan	0.81%
Methionine	0.85%	Arginine	4.59%
Sulfur amino acids	1.77%	Valine	3.01%
Threonine	2.47%		

<sup>1</sup>Nunes, A.J.P Evaluation of soy protein concentrate use for white shrimp feed, *litopenaeus vannamei*, on commercial cliets. International Aquafeed Magazine, 2012.

<sup>2</sup>Internal report - Technical data from reasearch trial conduct in kidchakan supamattya Aquatic Animal Reasearch Center - Prince of Songkia University. Evaluation of soy protein concentrate to formulate whiteleg shrimp diets, *Litopenaeus vannamei*, with nutritional commercial profile. 2012.

<sup>3</sup>Internal report - Technical data fom reasearch trial conduct in LABOMAR - Ceara University - Brazil; Evaluation of soy protein concentrate in whiteleg shrimp, *Litopenaeus vannamei*, in diets with commercial nutritional profile. 2012.



# X•SOY200™

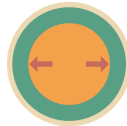
X•SOY 200 is produced by a special process that optimizes surface area to volume ration without damages in the protein and improving amino acids bioavailability. The particle size is 95% smaller than 180µm.

X•SOY 200 has ideal particle size for starter feed, specially pre starter and starter piglet feed. Other application are juvenile fish feed, shrimp feed and pet food starter diets.

## What is X•SOY 200

X•SOY 200 -micronized CJ Selecta's soy protein concentrate is produced trough aqueous alchol extraction of defatted soy flakes. This processes removes the soluble carbohydrates, trypsin inhibitors, glycinin, β-conglycinin, saponins and oligosaccharides that are considered to be allergenic and anti-nutritional factors (ANF's) in conventional soybean meal.

## ADVANTAGES



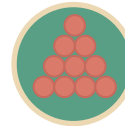
**Ideal Particle Size**



**High Digestibility**



**Intestinal Integrity**



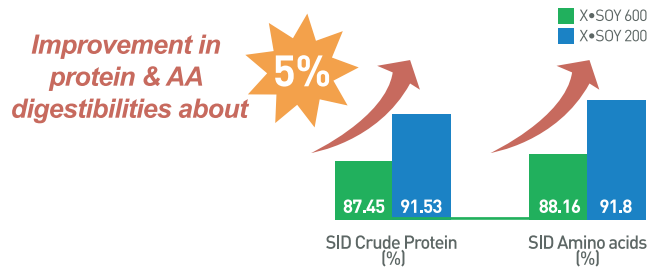
**High standard of uniformity**



**Gut Healthy**

## MRICORONIZATION

SID - Standardized Ileal digestibility for weaning pigs



Source : Technical report : Amino acid digestibility in X•SOY, soybean meal, and fish meal fed to weaning pigs. Experiment conducted by illinois University by guidance of Prof. Hans H. Stein. In December 2015. Unpublished data

## APPLICATIONS



### PIGLET

In comparison of Milk, Skim milk, dairy products, blood plasma, an others animal protein source



### AQUA

The use of X•SOY 200 in aqua feed is recommended not only in starter diets but also in growing phase formulations.



### PET

X•SOY 200 can be a safe protein source for replacing animal-based proteins in pet diets.

- X•SOY 200 has:
- **Health Benefits** : No risk of diseases
  - **Economical Benefits** : Better cost effectiveness

## RECOMMENDED INCLUSION RATES

Minimum rate	Suggestion
From 15%	Aqua feed starter
From 5%	PET food starter / Aqua, Poultry, Swine feed



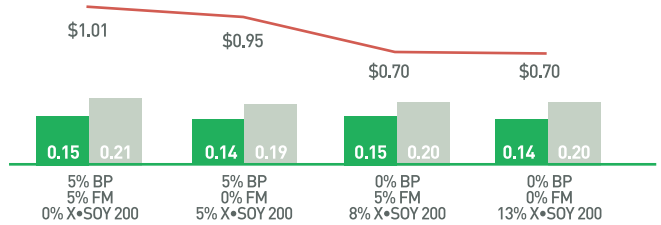
Due to its reduced particle size, X•SOY 200 is the ideal solution for piglets, especially in post weaning diets.

## Trial results



### EXCELLENT PERFORMANCE & BETTER COST : 30% REDUCTION IN FEED COST \$/KG WEIGHT GAIN

X•SOY 200 reduces cost when replaces fishmeal(FM) and blood plasma(BP) in post-weaning diet<sup>1</sup>



### X•SOY 200 IMPROVES INTESTINAL QUALITY IN PIGLET

Higher villus height and Crypt depth in X•SOY 200 diets



Diet 0% X•SOY  
Villus height 278µm

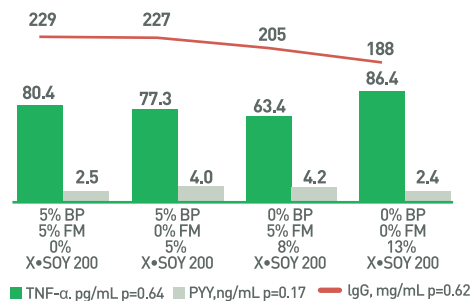


Diet 9% X•SOY  
Villus height 342µm



### GUARANTEED IMMUNE RESPONSE & ENERGY METABOLISM

Blood parameters remain stable with X•SOY 200 inclusion<sup>1</sup>



- TNF-α = pro-inflammatory cytokine that stimulates acute phase reaction.
- PYY = hormonal regulation of feed intake  
-High level : safety / Low level : Hunger
- IgG = Immunoglobulins that prevent infections.

## Specification

Amino acid	Total	Digestibility	Amino acid	Total	Digestibility
Lysine	3.87%	92.5%	Tryptophan	0.81%	95.0%
Methionine	0.85%	91.7%	Arginine	4.59%	97.8%
Sulfur amino acids	1.77%	85.8%	Valine	3.01%	91.6%
Threonine	2.47%	90.6%			

Energy	Kcal/kg
Metabolizable	3657

<sup>1</sup> Casas, G.A. et al. Nutritional value of soy protein concentrate ground to different particle sizes and fed to pigs. Journal of Animal Science, v95, p. 827-836. 2017.

<sup>2</sup> Resende et al. Effects of spray-dried plasma replacement for soy protein concentrate on growth performance of weaned pigs. Journal of Animal Science, v91 Supl. 2, p582. 2013.