

The logo for NutriForum is contained within a white speech bubble shape on a purple background. The word "nutri" is in a bold, lowercase sans-serif font, and "FORUM" is in a bold, uppercase sans-serif font. A stylized leaf icon is positioned to the right of the letter "i" in "nutri".

nutri
FORUM

APLICACIÓN DE PROTEÍNAS ALTERNATIVAS FUNCIONALIDAD DEL PLASMA EN AVES Y PORCINO

Ponencia
patrocinada por:



nutri
FORUM



Uso del plasma en aves de primeras edades

José Ignacio Ferrero
Director de formulación
en Nutega

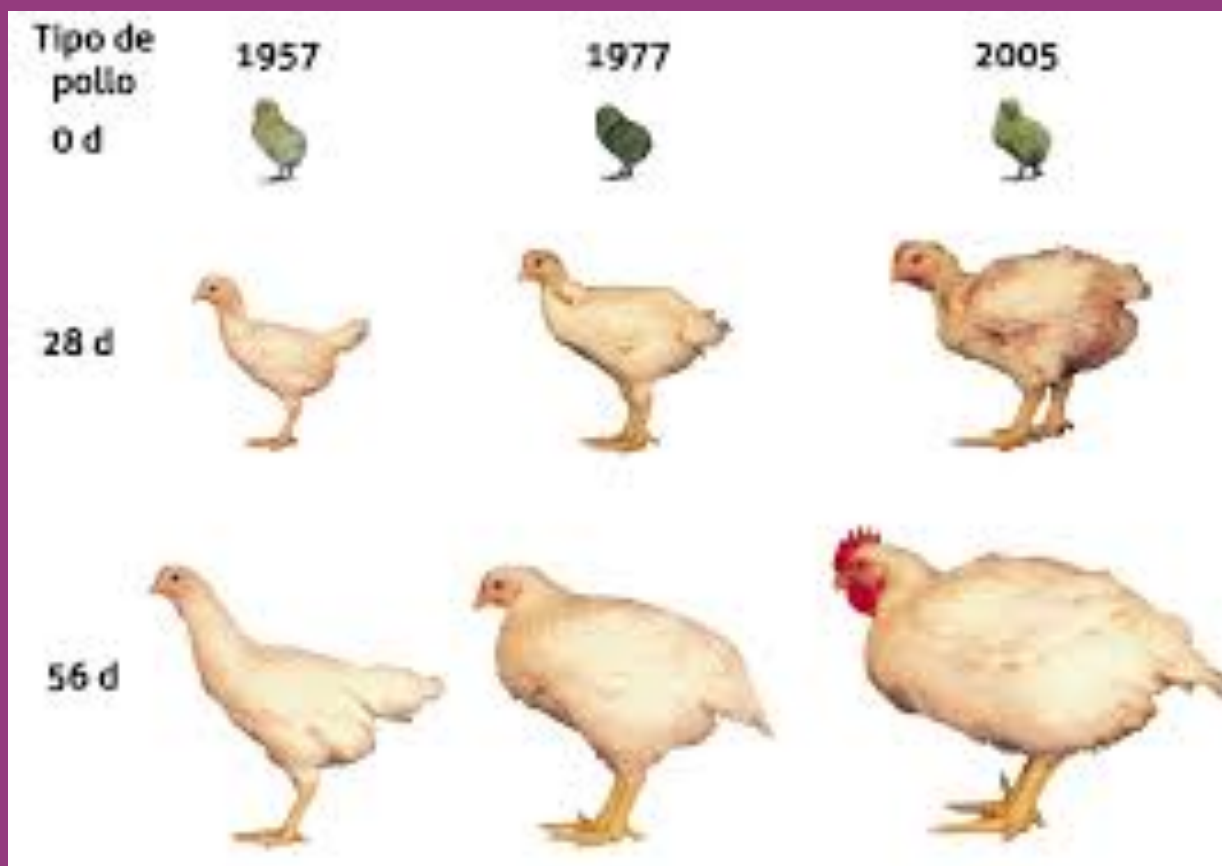


José Ignacio Ferrero

Ingeniero Agrónomo por la universidad politécnica de Madrid. En el ámbito de la Escuela desarrolló varios proyectos de calibración NIRS para predicción de valor nutritivo en piensos y en forrajes.

Se incorporó en 2002 al departamento de formulación de Nutega, desarrollando el trabajo de servicio de formulación para clientes, principalmente para monogástricos. Actualmente ocupa el puesto de Director de formulación.

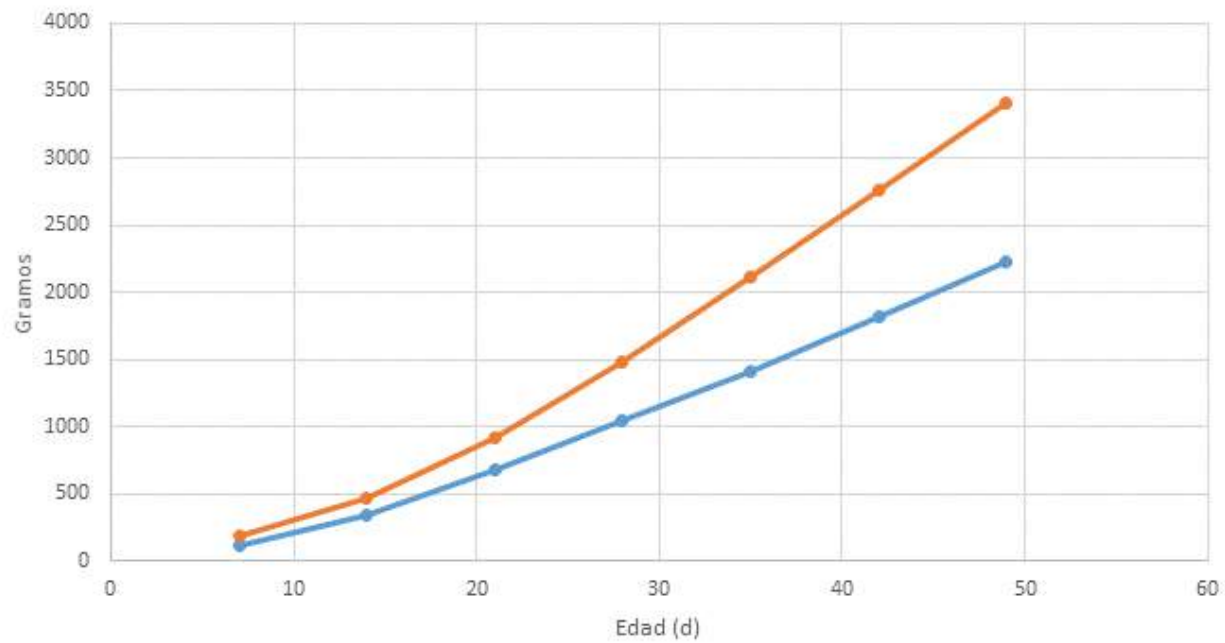




Evolución genética



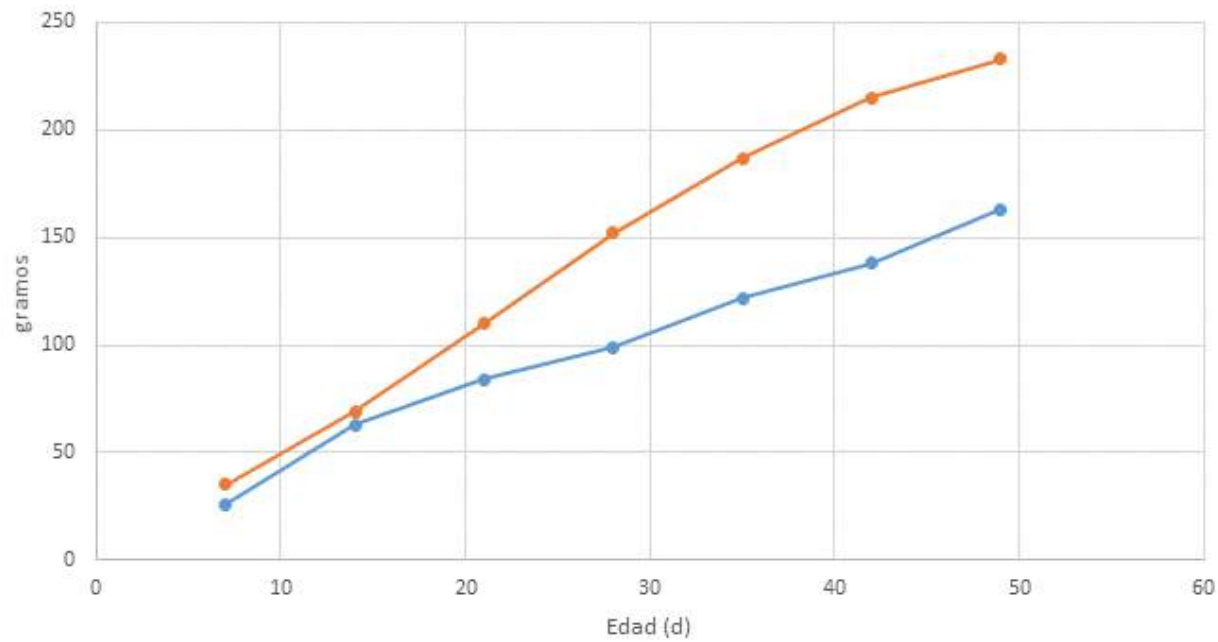
Peso Vivo (1993 vs 2012)



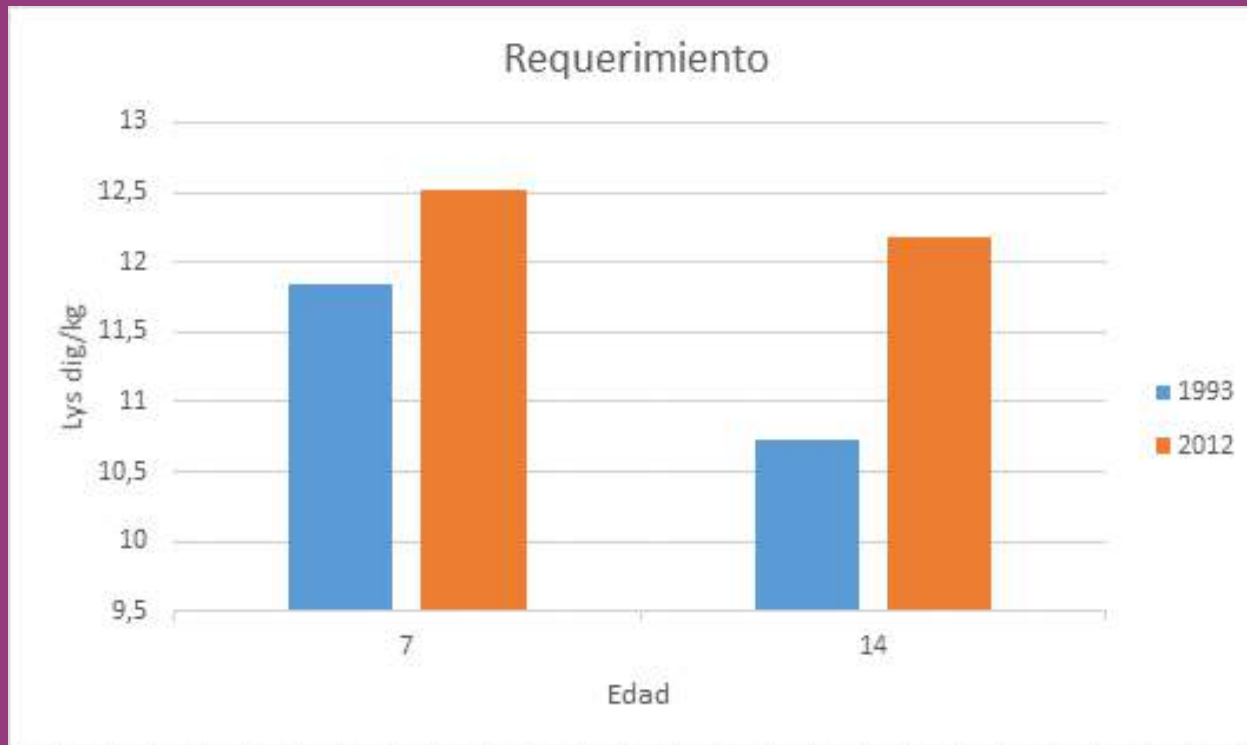
Evolución genética



Consumo medio diario(1993 vs 2012)



Evolución genética



Evolución genética

Según ecuaciones Brasileñas Rostagno, 2005



XF=maximum; others=minimum		ME	XF	XL	LA	XP	DXP	Arg	Gly	G+S	His	Ile	Leu	Lys	Met	Cys	M+C	Phe	Tyr	P+I	Thr	Trp	Val	
Broiler	CH		60			160									4.5									
Broiler	DI	12.5				220								12.0	5.0		9.0							
Broiler	DII	12.6				220								12.5	5.2		9.4							
Broiler	DII	13.0				230								0.915			0.621					0.651		
Broiler 1' 0-6 wks. per MJ MEIn	DK					17.5		1.09						11.5			8.5							
Broiler	YUH		50	50		210																		
Broiler	DI	11.5				220								11.8			8.5							
Starter	NL	13.0												4.2										
Starter	TR	12.1				220								12.5	5.0		9.1							
Starter intensive	H	13.0	23	52		230	208							11.0	4.0		7.5							
Starter semi-intensive	H	12.4	23	32		194	176							11.0	4.0		7.5							
Starter 0-2 wks.	BG	12.6		30		220	176	11.0	11.0		4.4	8.8	15.4	11.1	4.4	3.5		7.7	6.6					
Starter 0-2 wks.	DII	11.4				220								11.0	4.5		8.5							
Starter 0-2 wks.	FINRA	12.1				215		12.1		18.7	4.5	8.9	15.7	11.2	4.7		8.4			15.0	6.7		2.0	9.8
Starter 0-2 wks.	FINRA	12.6				222		12.6		19.4	4.6	9.2	16.3	11.6	4.8		8.7			15.5	7.0		2.1	10.1
Starter 0-2 wks.	FINRA	13.0				230		13.0		20.0	4.8	9.5	16.8	12.0	5.0		9.0			16.0	7.2		2.2	10.4
Starter 0-2 wks.	FINRA	13.4				237		13.4		20.6	5.0	9.6	17.3	12.4	5.2		9.3			16.5	7.4		2.3	10.8
Starter 0-2 wks.	N	11.7			10	200	160							11.0			8.5							
Starter 0-2 wks.	YUI	12.8				215	-240							11.8	5.5		8.9							2.4
Starter 0-3 wks.	BG					230		14.4		15.0	3.5	8.0	13.5	12.0	5.0		9.3		7.2		13.4	7.5		2.3
Starter 0-3 wks.	CS	11.7	30	40		210		10.5		4.2	8.4	14.7	10.5	4.2	2.1			7.4	7.4			7.4		2.1
Starter 0-3 wks.	SF	-13.4	-35			-230		-11.5		-4.6	-9.2	-16.1	-11.5	-4.6	-2.3			-8.1	-8.1			-8.1		-2.3
Starter 0-3 wks.		12.6				220		12.0		11.0	4.5	8.5	15.5	11.2	4.5		8.1		7.5		14.0	7.5		2.3
Starter 0-3 wks.						-230																		
Starter 0-3 wks.	USA/NRC	13.4			10	230		14.4		15.0	3.5	8.0	13.5	12.0	5.0		9.3		7.2		13.4	8.0		2.3
Starter 0-4 wks.	A	12.15	30			220								4.5			8.0							
Starter 0-4 wks.	CY	11.9				220								11.6	5.0		7.6							
Starter 0-4 wks.	PL	-12.1				-222																		
Starter 0-4 wks.	PL	12.5	35			220	190	13.0		12.0	5.0	8.0	16.5	11.5	5.5		10.0		9.0		14.0	7.0		2.3
Starter 1-4 wks.	DDR (590)					230	195	12.3						12.0			8.5							10.0
Starter 1-4 wks.	USSR	13.0	45			220		12.0	10.0		4.6	8.4	15.4	11.0	4.6		8.2		7.7		14.5	7.7		2.2
Starter 1-4 wks. temp. > 28°C	USSR	13.0	40		14	230								11.5			8.2							
Starter 1-30 d.	E	12.6				210		11.8						11.2	4.7		8.6							2.2
Starter after 2 wks.	YUH	12.8				200								10.3	4.1		7.4							2.2
Starter 2-4 wks.	BG	12.6	40			200	160	11.0	10.0		4.0	8.0	14.0	11.0	4.0	3.2		7.0	6.0			7.0		2.0
Grower intensive	H	13.0	25	53		210	189							11.5	4.6		8.4							
Grower semi-intensive	H	12.3	25	29		175	159							10.0	3.5		6.5							
Grower 3 wks. and more ♀♀	FINRA	12.1				187		9.8		15.6	3.7	7.4	13.1	9.4	4.1		7.1				12.4	5.6		1.9
Grower 3 wks. and more ♀♀	FINRA	12.6				194		10.2		16.2	3.9	7.6	13.5	9.7	4.3		7.4				12.4	5.8		1.9

WPSA, 1988

Requerimientos



XF=maximum; others=minimum		ME	XF	XL	LA	XP	DXP	Arg	Gly	G+S	His	Ile	Leu	Lys	Met	Cys	M+C	Phe	Tyr	P+I	Thr	Trp	Val	
Broiler	CH		60			160									4.5									
Broiler	DI	12.5				220								12.0	5.0		9.0							
Broiler	DII	12.6				220								12.5	5.2		9.4							
Broiler	DIII	13.0				230								0.91			0.621					0.651		
Broiler 1' 0-6 wks. per MJ MEIn	DK					17.5		1.09						11.5			8.5							
Broiler	YUH		50	50		210																		
Broiler	DI	11.5				220								11.8			8.5							
Starter	NL	13.0												4.2										
Starter	TR	12.1				220								12.5	5.0		9.1							
Starter intensive	H	13.0	23	52		230	208							11.0	4.0		7.5							
Starter semi-intensive	H	12.4	23	32		194	176							11.0	4.4	3.5		7.7	6.6			7.7	2.2	9.3
Starter 0-2 wks.	BG	12.6		30		220	176	11.0	11.0		4.4	8.8	15.4	11.1	4.4	3.5		8.5						
Starter 0-2 wks.	DII	11.4				220								11.0	4.5		8.5							
Starter 0-2 wks.	FINRA	12.1				215		12.1		18.7	4.5	8.9	15.7	11.2	4.7		8.4				15.0	6.7	2.0	9.8
Starter 0-2 wks.	FINRA	12.6				222		12.6		19.4	4.6	9.2	16.3	11.6	4.8		8.7				15.5	7.0	2.1	10.1
Starter 0-2 wks.	FINRA	13.0				230		13.0		20.0	4.8	9.5	16.8	12.0	5.0		9.0				16.0	7.2	2.2	10.4
Starter 0-2 wks.	FINRA	13.4				237		13.4		20.6	5.0	9.6	17.2	12.4	5.2		9.3				16.5	7.4	2.3	10.8
Starter 0-2 wks.	N	11.7			10	200	160							11.0			8.5							
Starter 0-2 wks.	YUI	12.8				215	-240							11.8	5.5		8.9							2.4
Starter 0-3 wks.	BG					230		14.4		15.0	3.5	8.0	13.3	12.0	5.0		9.3		7.2		13.4	7.5	2.3	8.2
Starter 0-3 wks.	CS	11.7	30	40		210		10.5		4.2	8.4	14.1	10.5	4.2	2.1		7.4	7.4			7.4	7.4	2.1	9.0
Starter 0-3 wks.	SF	-13.4	-35			-230		-11.5		-4.6	-9.2	-16.1	-11.5	-4.6	-2.3		-8.1	-8.1			-8.1	-2.3	9.0	
Starter 0-3 wks.		12.6				220		12.0		11.0	4.5	8.5	15.1	11.2	4.5		8.1	7.5			14.0	7.5	2.3	9.5
Starter 0-3 wks.						-230																		
Starter 0-3 wks.	USA/NRC	13.4			10	230		14.4		15.0	3.5	8.0	13.3	12.0	5.0		9.3		7.2		13.4	8.0	2.3	8.2
Starter 0-4 wks.	A	12.15	30			220								4.5		8.0								
Starter 0-4 wks.	CY	11.9				220								11.6	5.0		7.6							
Starter 0-4 wks.	PL	12.5	35			220	190	13.0		12.0	5.0	8.0	16.1	11.5	5.5		10.0	9.0			14.0	7.0	2.3	10.0
Starter 1-4 wks.	DDR (590)					230	195	12.3						12.0			8.5							
Starter 1-4 wks.	USSR	13.0	45			220		12.0	10.0		4.6	8.4	15.8	11.0	4.6		8.2	7.7			14.5	7.7	2.2	9.4
Starter 1-4 wks. temp. > 28°C	USSR	13.0	40		1	230								11.5			8.2							
Starter 1-30 d.	E	12.6				210		11.8						11.2			8.6							2.2
Starter after 2 wks.	YUII	12.8				200								10.3	4.1		7.4							2.2
Starter 2-4 wks.	BG	12.6	40			200	160	11.0	10.0		4.0	8.0	14.0	11.0	4.0	3.2		7.0	6.0			7.0	2.0	8.6
Grower intensive	H	13.0	25	53		210	189							11.5	4.6		8.4							
Grower semi-intensive	H	12.3	25	29		175	159							10.0	3.5		6.5							
Grower 3 wks. and more ♀♀	FINRA	12.1				187		9.8		15.6	3.7	7.4	13.1	9.4	4.1		7.1				12.4	5.6	1.9	8.2
Grower 3 wks. and more ♀♀	FINRA	12.6				194		10.2		16.2	3.9	7.6	13.5	9.7	4.3		7.4				12.4	5.8	1.9	8.5

Requerimientos

WPSA, 1988

21-22 %PB

12-12,5 g lys/kg pienso



XF=maximum; others=minimum		ME	XF	XL	LA	XP	DXP	Arg	Gly	G+S	His	Ile	Leu	Lys	Met	Cys	M+C	Phe	Tyr	P+I	Thr	Trp	Val	
Broiler	CH		60			160									4.5									
Broiler	DI	12.5				220								12.0	5.0		9.0							
Broiler	DII	12.6				220								12.5	5.2		9.4							
Broiler	DIII	13.0				230								0.91			0.621					0.651		
Broiler 1' 0-6 wks. per MJ MEIn	DK					17.5		1.09						11.5			8.5							
Broiler	YUH		50	50		210																		
Broiler	DI	11.5				220								11.8			8.5							
Starter	NL	13.0												4.2										
Starter	TR	12.1				220								12.5	5.0		9.1							
Starter intensive	H	13.0	23	52		230	208							11.0	4.0		7.5							
Starter semi-intensive	H	12.4	23	32		194	176							11.0	4.4	3.5		7.7	6.6			7.7	2.2	9.3
Starter 0-2 wks.	BG	12.6		30		220	176	11.0	11.0		4.4	8.8	15.4	11.1	4.4	3.5		8.5						
Starter 0-2 wks.	DII	11.4				220								11.0	4.5		8.5							
Starter 0-2 wks.	FINRA	12.1				215		12.1		18.7	4.5	8.9	15.7	11.2	4.7		8.4				15.0	6.7	2.0	9.8
Starter 0-2 wks.	FINRA	12.6				222		12.6		19.4	4.6	9.2	16.1	11.6	4.8		8.7				15.5	7.0	2.1	10.1
Starter 0-2 wks.	FINRA	13.0				230		13.0		20.0	4.8	9.5	16.8	12.0	5.0		9.0				16.0	7.2	2.2	10.4
Starter 0-2 wks.	FINRA	13.4				237		13.4		20.6	5.0	9.6	17.1	12.4	5.2		9.3				16.5	7.4	2.3	10.8
Starter 0-2 wks.	N	11.7			10	200	160							11.0			8.5							
Starter 0-2 wks.	YUI	12.8				215	-240							11.8	5.5		8.9							2.4
Starter 0-3 wks.	BG					230		14.4		15.0	3.5	8.0	13.1	12.0	5.0		9.3		7.2		13.4	7.5	2.3	8.2
Starter 0-3 wks.	CS	11.7	30	40		210		10.5		4.2	8.4	14.1	10.5	4.2	2.1		7.4	7.4			7.4	7.4	2.1	9.0
Starter 0-3 wks.	SF	-13.4	-35			-230		-11.5		-4.6	-9.2	-16.1	-11.5	-4.6	-2.3		-8.1	-8.1			-8.1	-2.3	9.0	
Starter 0-3 wks.		12.6				220		12.0		11.0	4.5	8.5	15.1	11.2	4.5		8.1	7.5			14.0	7.5	2.3	9.5
Starter 0-3 wks.						-230																		
Starter 0-3 wks.	USA/NRC	13.4			10	230		14.4		15.0	3.5	8.0	13.1	12.0	5.0		9.3	7.2			13.4	8.0	2.3	8.2
Starter 0-4 wks.	A	12.15	30			220								4.5		8.0								
Starter 0-4 wks.	CY	11.9				220								11.6	5.0		7.6							
Starter 0-4 wks.	PL	12.5	35			220	190	13.0		12.0	5.0	8.0	16.1	11.5	5.5		10.0	9.0			14.0	7.0	2.3	10.0
Starter 1-4 wks.	DDR (590)					230	195	12.3						12.0			8.5							
Starter 1-4 wks.	USSR	13.0	45			220		12.0	10.0		4.6	8.4	15.1	11.0	4.6		8.2	7.7			14.5	7.7	2.2	9.4
Starter 1-4 wks. temp. > 28°C	USSR	13.0	40		1	230								11.5			8.2							
Starter 1-30 d.	E	12.6				210		11.8						11.2			8.6							2.2
Starter after 2 wks.	YUII	12.8				200								10.3	4.1		7.4							2.2
Starter 2-4 wks.	BG	12.6	40			200	160	11.0	10.0		4.0	8.0	14.0	11.0	4.0	3.2		7.0	6.0			7.0	2.0	8.6
Grower intensive	H	13.0	25	53		210	189							11.5	4.6		8.4							
Grower semi-intensive	H	12.3	25	29		175	159							10.0	3.5		6.5							
Grower 3 wks. and more ♀♀	FINRA	12.1				187		9.8		15.6	3.7	7.4	13.1	9.4	4.1		7.1				12.4	5.6	1.9	8.2
Grower 3 wks. and more ♀♀	FINRA	12.6				194		10.2		16.2	3.9	7.6	13.5	9.7	4.3		7.4				12.4	5.8	1.9	8.5

Requerimientos

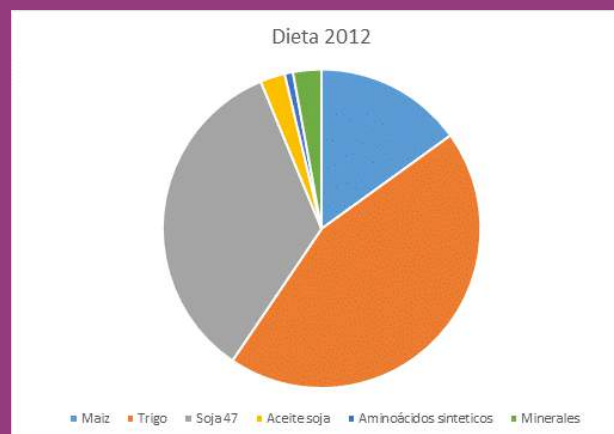
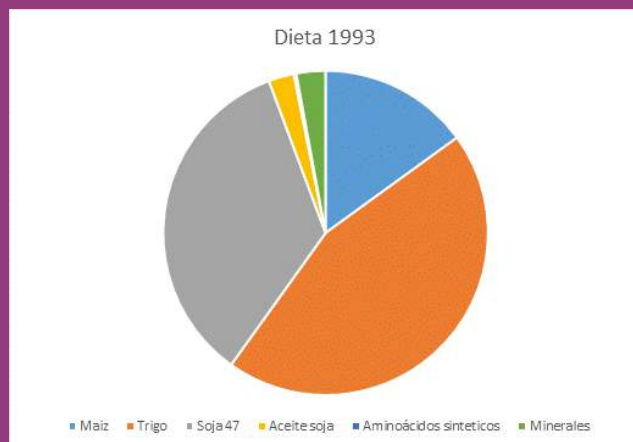
WPSA, 1988

21-22 %PB

12-12,5 g lys/kg pienso

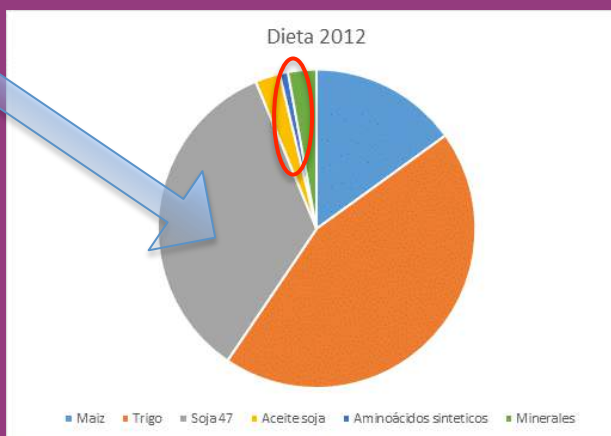
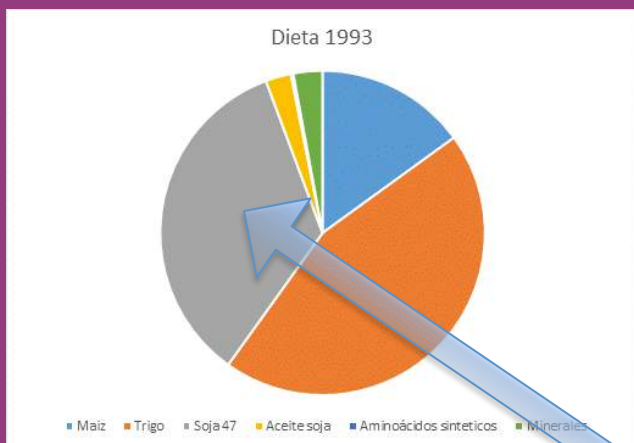


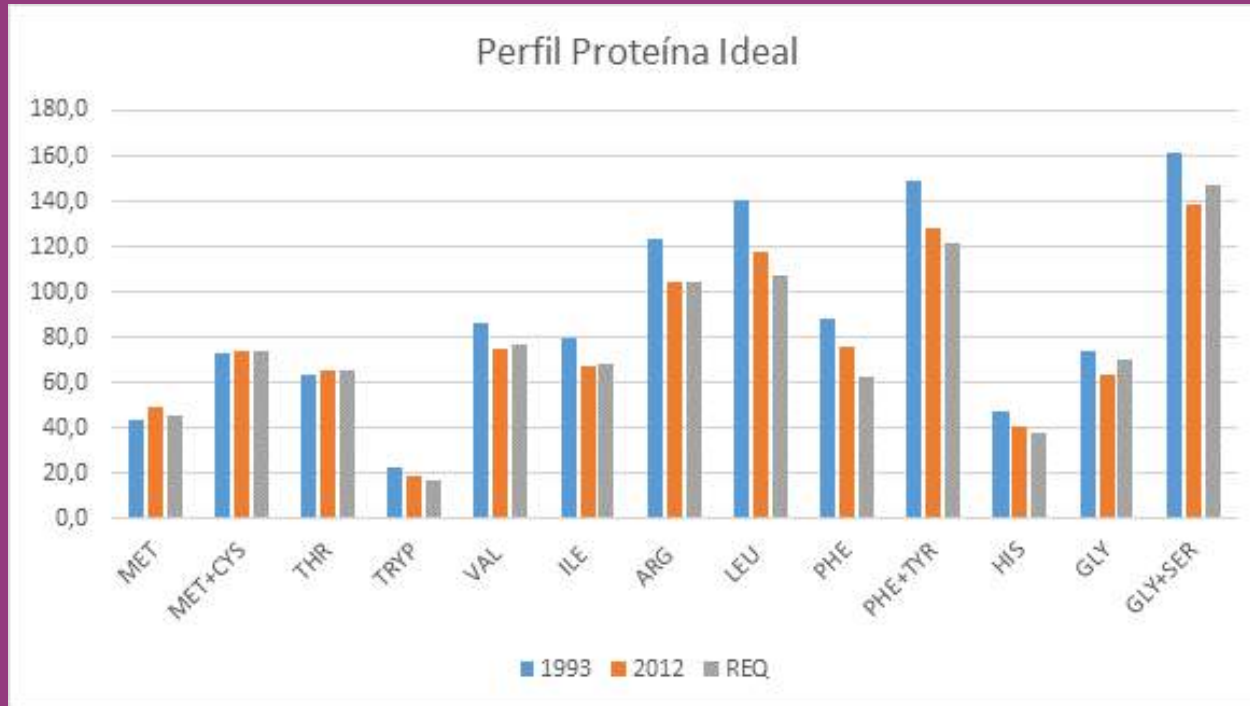
COMPARACIÓN DIETA 2012 VS 1993





COMPARACIÓN DIETA 2012 VS 1993



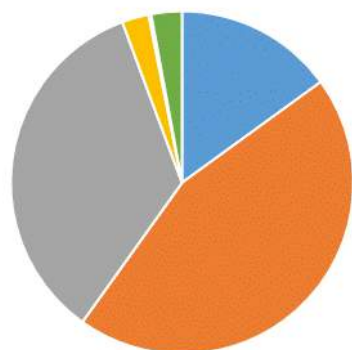


COMPARACIÓN PERFIL 2012 VS 1993



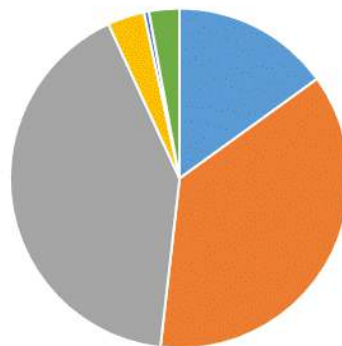
COMPARACIÓN DIETA 2012 VS 1993

Dieta 1993



■ Maiz ■ Trigo ■ Soja 47 ■ Aceite soja ■ Aminoácidos sintéticos ■ Minerales

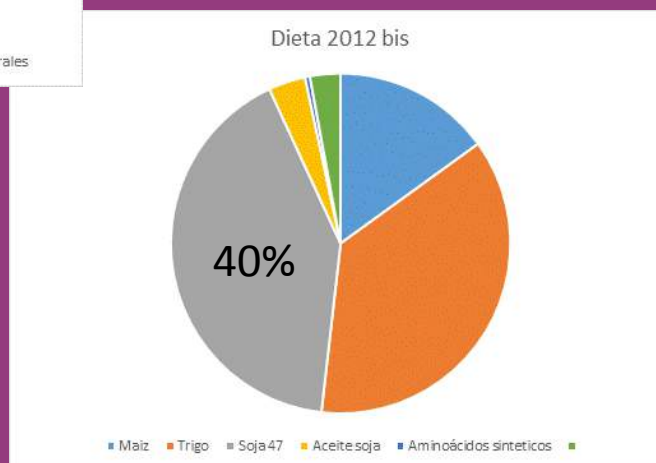
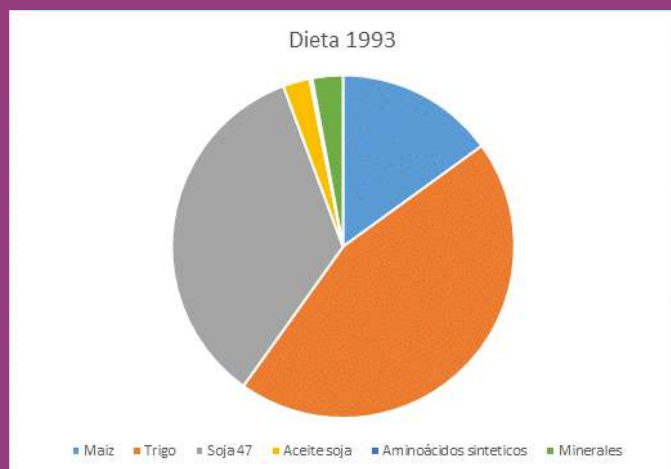
Dieta 2012 bis



■ Maiz ■ Trigo ■ Soja 47 ■ Aceite soja ■ Aminoácidos sintéticos ■ Minerales

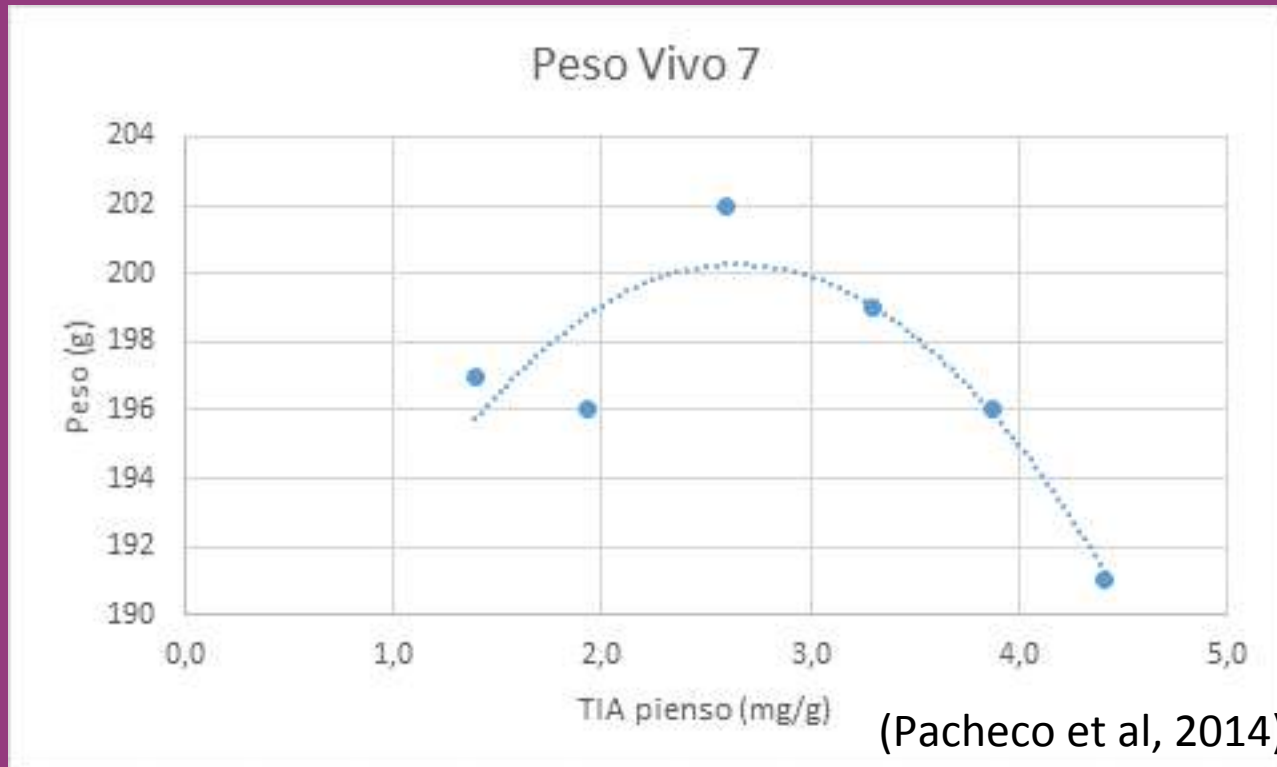


COMPARACIÓN DIETA 2012 VS 1993



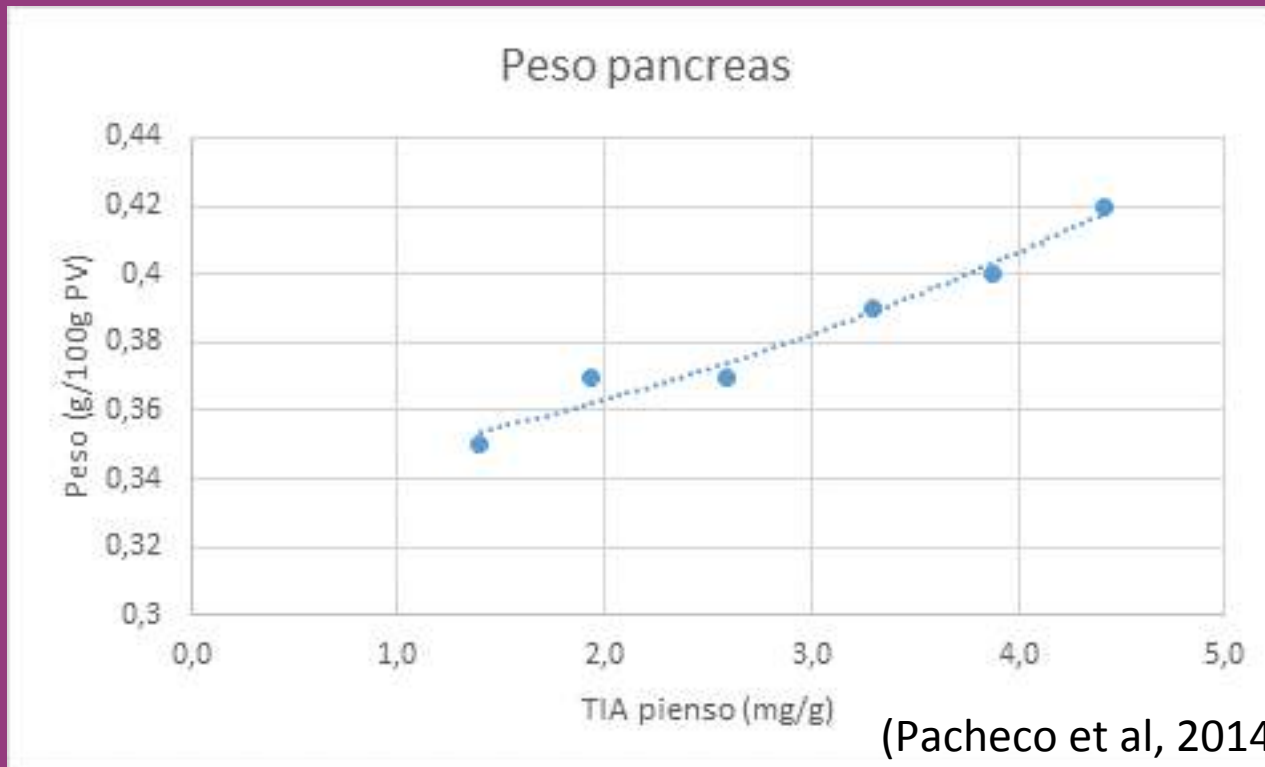


INHIBIDORES TRIPSINA Y PESO VIVO



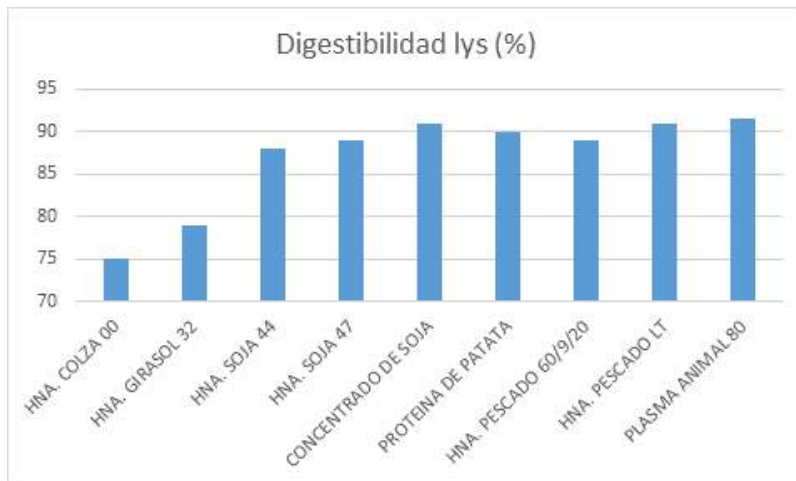


INHIBIDORES TRIPSINA Y PESO PANCREAS





MATERIAS PRIMAS ALTERNATIVAS



(Fedna, 2010)



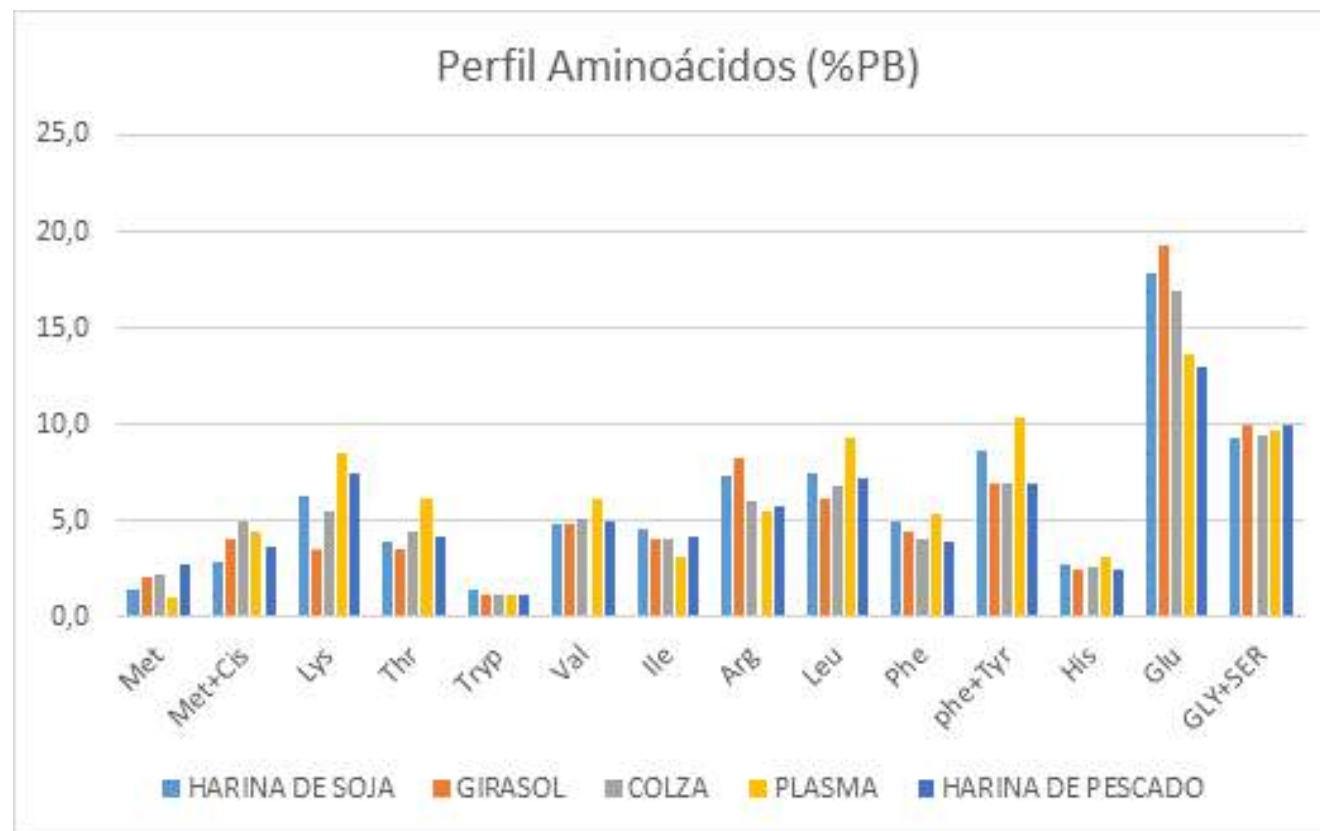
PERFIL DE AMINOÁCIDOS COMPLEMENTARIO



ELEVADA DIGESTIBILIDAD



MODERACIÓN NIVELES POTASIO





DESARROLLO INTESTINAL POLLITOS

Tras la eclosión:

A las pocas horas los enterocitos aumentan su longitud y se define el borde en cepillo (Geyra *et al*, 2001; Uni *et al*, 2003a; Karcher *et al*, 2008).

A los 2-3 días:

Se definen las Criptas, creciendo en numero y tamaño (Uni *et al*, 2000;Geyra *et al*, 2001; Karcher *et al*, 2008).

Desarrollo de las células calciformes, (productoras de mucina) (Uni *et al*, 2003b; Karcher *et al*, 2008).

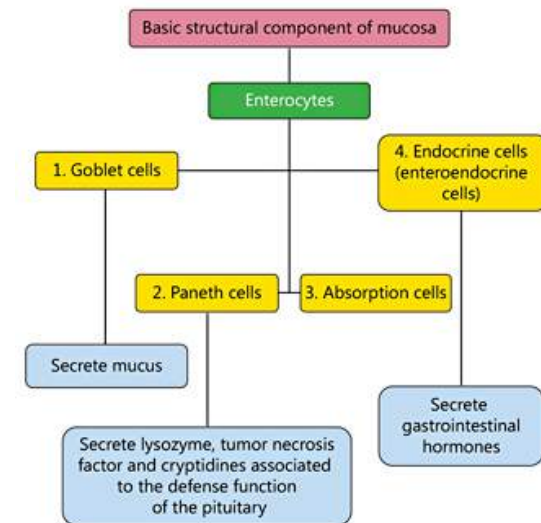
A los 7 días:

Se completa el crecimiento de las vellosidades en duodeno

A los 14 días

En yeyuno e íleon (Uni *et al*., 1998).

Los primeros días la actividad enzimática del borde en cepillo esta relacionada con el numero de enterocitos (Uni, Z, Universidad Hebrea de Jerusalem, 2008).



A decorative graphic of a leafy branch is positioned in the top left corner of the slide, extending from the left edge into the purple header area.

MEJORA DESARROLLO DIGESTIVO

- PRESENTACIÓN PIENSO
- COMPOSICIÓN PIENSO
- Niveles de fibra
- Equilibrio de aminoácidos
- Enzimas exógenas
- Ácidos grasos omega 3
- Ácido Butírico
- Plasma porcino



DESARROLLO DE MOLLEJA-NIVEL DE FIBRA

Item	Growth performance ²				AME _n , ³ kcal/kg	Gizzard ³		
	ADG, g	ADFI, g	FCR	Energy efficiency		Empty weight, % of BW	Digesta content, % of full organ	pH
Feed form								
Mash	29.1 ^b	37.3 ^b	1.277 ^b	3.97 ^a	3,266 ^a	2.23 ^a	31.8 ^a	3.28 ^b
Pelleted	38.6 ^a	48.1 ^a	1.238 ^a	3.85 ^b	3,247 ^b	1.67 ^b	21.0 ^b	3.87 ^a
Diet⁴								
Control ⁵	32.9	41.9	1.237	4.07 ^a	3,209 ^d	1.55 ^d	15.0 ^e	4.10 ^a
Oat hulls, 2.5%	34.0	42.9	1.264	3.95 ^b	3,256 ^c	1.95 ^b	27.8 ^{bc}	3.47 ^{bc}
Oat hulls, 5%	33.7	42.2	1.257	3.85 ^c	3,260 ^{bc}	2.40 ^a	30.9 ^{ab}	3.20 ^c
Rice hulls, 2.5%	34.2	42.8	1.256	3.92 ^b	3,288 ^a	1.97 ^b	25.8 ^c	3.57 ^b
Rice hulls, 5%	34.7	43.0	1.264	3.85 ^c	3,243 ^c	2.05 ^b	31.5 ^a	3.54 ^b
Sunflower hulls, 2.5%	33.8	42.1	1.249	3.90 ^b	3,261 ^{bc}	1.70 ^c	21.6 ^d	3.65 ^b
Sunflower hulls, 5%	33.7	42.2	1.252	3.83 ^c	3,280 ^{ab}	2.03 ^b	32.2 ^a	3.49 ^{bc}
SEM ⁶	0.70	0.82	0.0094	0.020	12	0.063	1.68	0.142

Mateos et al, 2012



DESARROLLO DIGESTIVO-EQUILIBRIO DE AMINOÁCIDOS

- ❁ Treonina: fuente de mucina, mayor requerimiento en aves infectadas por Clostridium (Star, et al, 2012)
- ❁ Incremento de altura de villi (d21) (Chen et al, 2017)

Items	Control	1g/kg Thr	3g/kg Thr
Diamine oxidase (U/mL)	14.1	14.4	11.6
Villus height (μm)			
Jejunum	1074 ^b	1173 ^{a,b}	1270 ^a
Ileum	832 ^c	934 ^b	1011 ^a
Crypt depth (μm)			
Jejunum	324	292	288
Ileum	270	263	250
Villus height: crypt depth ($\mu\text{m}: \mu\text{m}$)			
Jejunum	3.33 ^c	4.02 ^b	4.43 ^a
Ileum	3.08 ^c	3.56 ^b	4.06 ^a



DESARROLLO DIGESTIVO-EQUILIBRIO DE AMINOÁCIDOS

- ❁ Glicina+Serina: fuente de mucina, interacción con nivel treonina (Ospina-Rojas et al, 2013)
- ❁ Glutamina: combustible enterocitos, esencial bajo condiciones de inflamación.

Treatment ¹	Duodenal villi height	Jejunual villi height
	————— (µm) —————	
7 d of age		
Corn-SBM	651.49 ^c	526.02 ^c
1% Gln in feed	762.63 ^b	693.72 ^b
4% Gln in feed	921.34 ^a	743.55 ^a
Pooled SEM	34.06	14.61
P-value	0.0001	0.001
14 d of age		
Corn-SBM	706.57 ^b	481.36 ^c
1% Gln in feed	934.09 ^a	697.88 ^b
4% Gln in feed	990.07 ^a	779.80 ^a
Pooled SEM	69.84	25.31
P-value	0.0001	0.0001

Bartell y Batal, 2017



Altura de villi a 22 d, xilanas, proteasa y amilasa

	HP maize		ES (mg/kg)	
	Raw	C-F ^d	0	500
Villus height (μm)				
4	784	790	797	731
8	916	1103	938	905
15	1066	1200	1196	1275
21	1170	1198	1173	1318
Average ^e	1028	1042	1005	1065

Gracia et al, 2009

DESARROLLO DIGESTIVO-ENZIMAS EXOGENAS



Efecto enzimas sobre viscosidad establecido y claro.



Efecto sobre aprovechamiento nutrientes e IC.



Efecto sobre desarrollo digestivo y prevención enteritis necrótica.



Villi morphology (μm)	Flax10	Flax15
Duodenum		
VH	731.89 ^b	877.53 ^a
VW	101.79 ^a	98.89 ^a
CD	190.79	207.07
VH:CD	4.03 ^b	4.41 ^{a,b}
Jejunum		
VH	577.61 ^b	604.35 ^b
VW	84.57 ^b	88.50 ^b
CD	170.96 ^b	176.32 ^b
VH:CD	3.40 ^c	3.66 ^c

Apperson y Cheria, 2016

OMEGA 3- DESARROLLO INTESTINAL



A. G. omega 3 componentes de la membrana celular.



Mejor recuperación de lesiones en ratas y lechones (Lopez-Pedrosa, 1999)



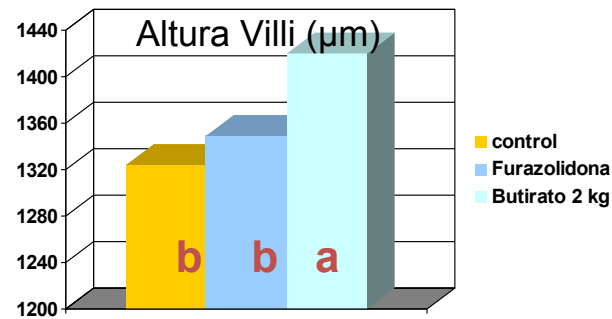
Mejor recuperación de coccidiosis (Korver y Klasing, 1997)



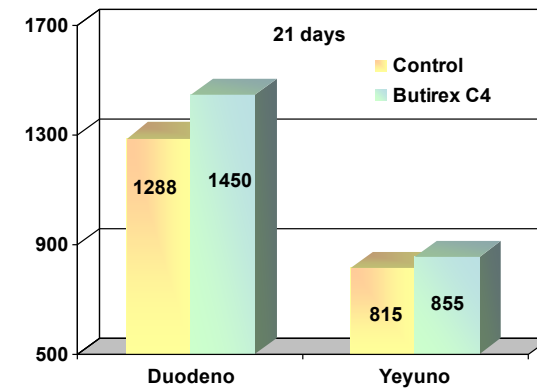
DESARROLLO DE VELLOSIDADES BUTIRATO SÓDICO



Butirato sobre vellosidades en broilers de 22 días de edad (Panda et al. 2009).



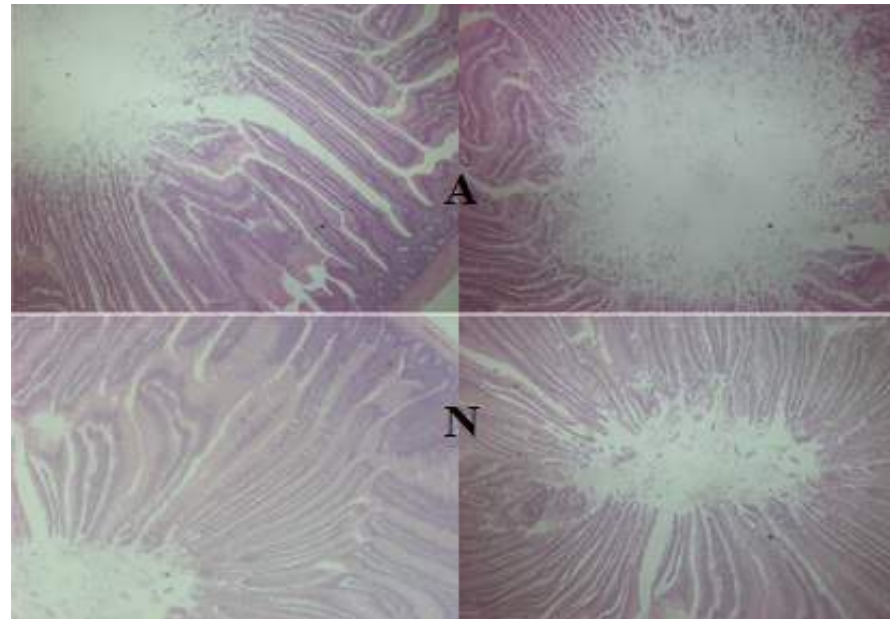
Altura vellosidades (µm) broilers (UPM Spain, 2008)



a,b mean signification P<0.05



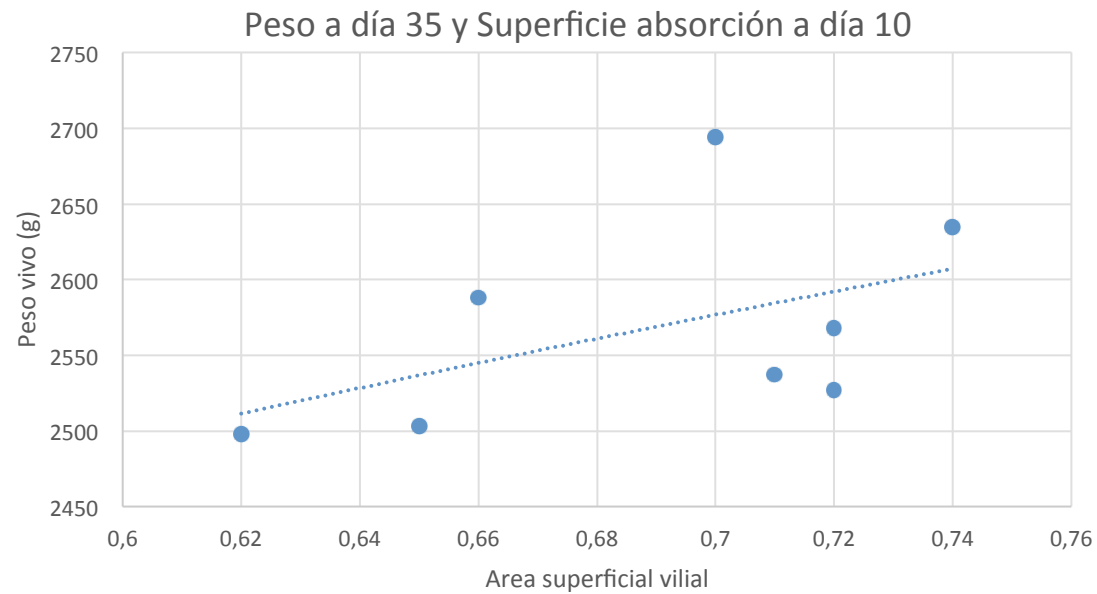
DESARROLLO DE VELLOSIDADES BUTIRATO SÓDICO



A : Control
N : Butirato sódico



MEJORA DESARROLLO DIGESTIVO PLASMA- CRECIMIENTO



(Beski et al, 2015)



MEJORA DESARROLLO DIGESTIVO PLASMA

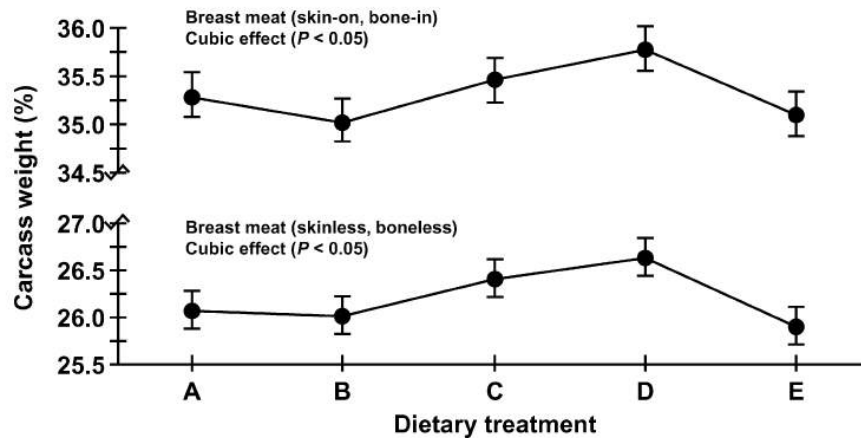
Nivel plasma (%)	peso día 10 (g)	peso día 35 (g)	altura villi d24 (um)	IC (d35)
0	278b	2533b	1898,6b	1,625a
0,5	299a	2520b	1885b	1,588ab
1,0	302a	2558b	1967,2a	1,537bc
2,0	308a	2665a	1978,3a	1,493c

(Beski et al, 2015)





EFEECTO DE PLASMA SOBRE CALIDAD DE CANAL



A: control
B: plasma 0,5%/0,25%/0,125%
C: plasma 1%/0,5%/0,25%
D: plasma 1,5%/0,75%/0,375%
E: plasma 2%/1%/0,5%

Bregendahl et al, 2005

1

Efecto sobre rendimiento de pechuga en condiciones sanitarias adversas.

2

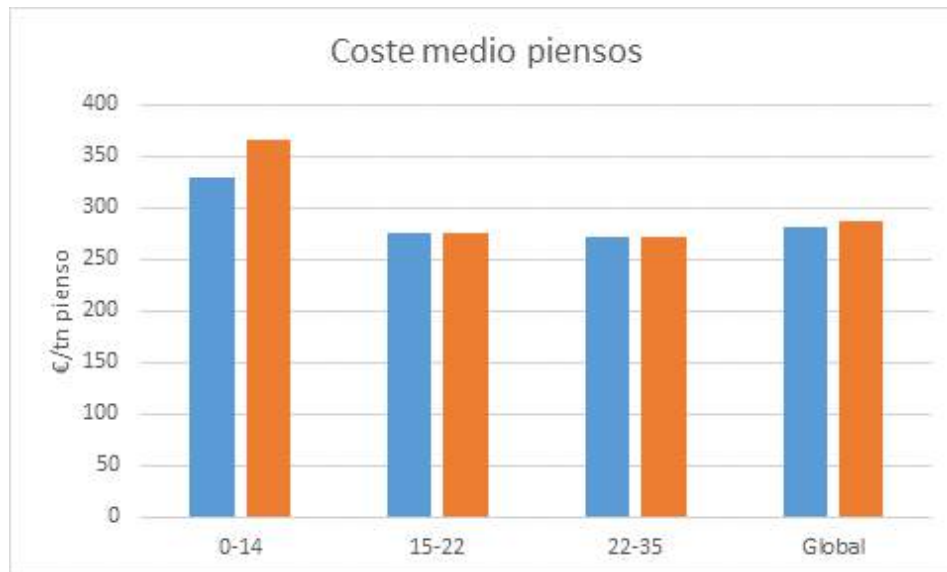
Probablemente por mejoras en capacidad e absorción y equilibrio de aminoácidos.

3

Plasma añadido durante toda la crianza.



Estudio económico dieta 1 edad enriquecida 1% plasma





RESULTADO ECONOMICO DIETA ENRIQUECIDA PLASMA

	Estándar	Plasma	Diferencia (%)
Coste medio Kg pienso (€/kg)	0,282	0,287	1,9
IC	1,625	1,537	-5,4
Coste Kg carne (€/kg)	0,458	0,442	-3,6

A decorative graphic of a leafy branch is positioned in the top left corner of the slide, extending from the left edge into the purple header area.

CONCLUSIONES

- ❖ Dieta de primera edad influencia desarrollo digestivo
- ❖ Efecto directo sobre crecimiento y aprovechamiento nutrientes.
- ❖ Efecto sobre parámetros sanitarios.
- ❖ Plasma produce mejoras en desarrollo digestivo y ayuda a controlar nivel de soja.
- ❖ Inversión rentable

A decorative graphic of a branch with several leaves, rendered in a lighter shade of purple, positioned on the left side of the slide.

2

**MUCHAS GRACIAS
POR SU ATENCIÓN**