

FOOD INTEGRITY IN THE FOOD CHAIN : HOW CAN THE ANIMAL PRODUCTION SECTOR CONTRIBUTE ?



EXEMPLE OF THE BLEU-BLANC-COEUR APPROACH

1- SCIENCE

2- PROOF OF CONCEPT

3- PUBLIC HEALTH AND ENVIRONMENT IMPROVEMENT



FIRST - WHAT ARE THE CURRENT CONSUMER EXPECTATIONS ?

✿ A more connected consumer who wants to understand



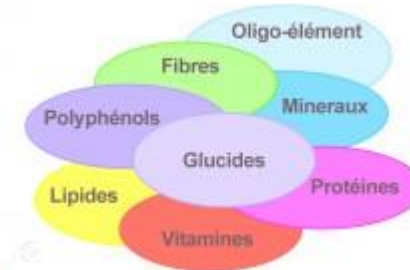
✿ ... a growing concern for animal welfare

- ▶ Without antibiotics, ...
- ▶ Breeding conditions



✿ ... nutritional density

- ▶ Vitamins, lipids, Aov for which the risks of impairments are important
- ▶ But also animal feed without GMO, without pesticides -> BIO?



✿ Insurance - proximity

- ▶ Social link (direct sales, proximity, local)
- ▶ Transparency: information on origin, visits to the farm



✿ While being "sustainable" -> production of a food / with Sustainable Agriculture



& WHAT IS THE MOST COMMON RESPONSE OF THE MARKET ?



NO CALORIE
NO CHOLESTEROL
NO FAT
NO MEAT
NO SODIUM
NO ANIMAL FAT
NO DAIRY PRODUCT
NO CARBOHYDRATE
NO SUGAR



No GMO



AND THE STRONG TREND OF THE MOMENT




Abolition of livestock



VEGAN FOR:
ANIMALS
THE PLANET
GOOD HEALTH

VEGANISM & THE ENVIRONMENT



LIVESTOCK ACCOUNTS FOR 14.5% OF HUMAN-INDUCED GREENHOUSE GAS EMISSIONS

CATTLE REARING GENERATES MORE GREENHOUSE EMISSIONS THAN THE TRANSPORTATION SECTOR

20% OF THE AMAZON HAS BEEN CUT DOWN SINCE 1970 FOR LIVESTOCK GRAZING & FEED


AGRICULTURE, PRIMARILY MEAT & DAIRY, ACCOUNTS FOR 70% OF FRESHWATER CONSUMPTION

SOURCE: VEGANOUTREACH.ORG, UN.ORG / GRAPHIC BY: JERICHO ROGAS / THE DAILY TOREADOR

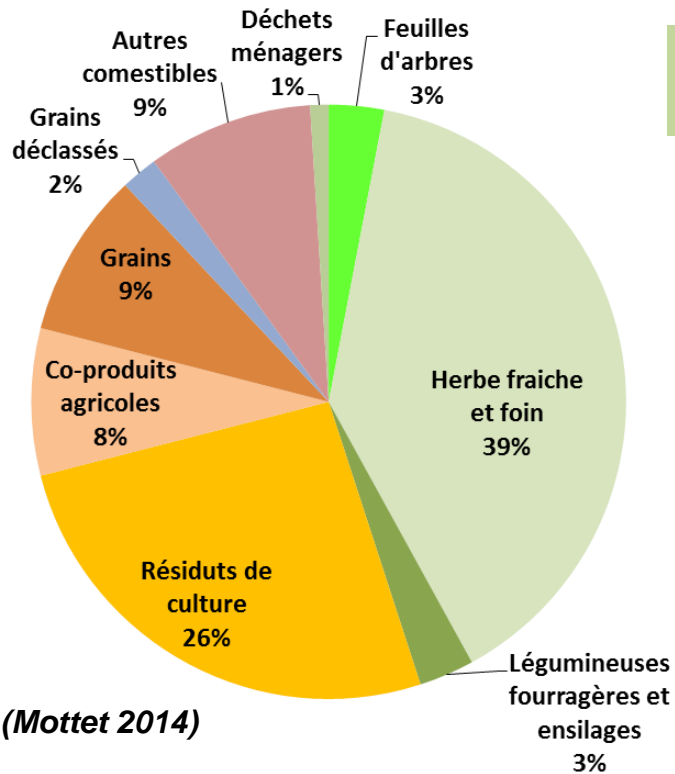
VEGETARIANS AND VEGANS LIVE, ON AVERAGE, SIX TO TEN YEARS LONGER THAN MEAT-EATERS.



MEAT-EATERS ARE TWICE AS LIKELY AS VEGETARIANS TO DEVELOP HEART DISEASE.



BREEDING IS AN EXCELLENT SOURCE OF PROTEIN CONVERSION



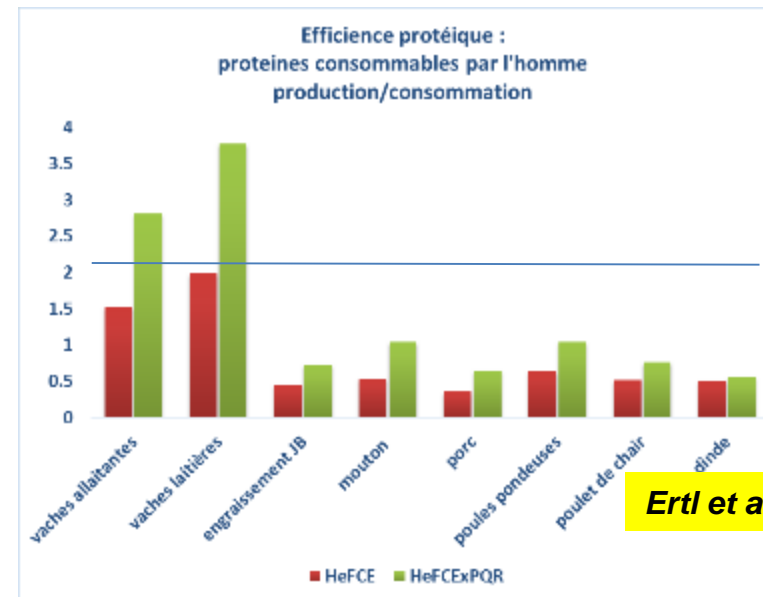
(Mottet 2014)

The bulk of feed for livestock (about 3/4 of dry matter ingested) does not compete with human food

Livestock may seem inefficient, but it can convert protein of poor quality into protein of good quality

Human Protein footprint is more dependent on animal diet choices than on animal / vegetal ratio in human regimen.

Conversion efficiency, vegetable protein consumable by humans / animal proteins consumable by humans



Ertl et al., 2016

ANIMAL PRODUCTS AND HEALTH



Austrian Health survey, 1320 personnes

en % des sujets souffrant de ces maladies chroniques

	Végétarien	Omnivore	Omnivore peu de viande	Omnivore beaucoup de viande	p
Asthme	4.8	3.3	3.9	4.5	0.772
Allergies	30.6	18.2	20.3	16.7	0.000
Diabète	2.7	4.2	2.4	2.4	0.455
Infarctus	1.5	1.5	0.9	0.6	0.610
Bronchites	3.9	3.6	2.4	3.0	0.701
Ostéoporose	6.4	4.8	3.6	5.8	0.415
Cancers	4.8	3.3	1.2	1.8	0.022
Migraine	15.8	11.8	9.1	12.1	0.074
Maladies mentales*	9.4	4.8	5.8	4.5	0.036
Autres	8.8	5.5	5.8	6.7	0.308

*anxiété et dépression






There are no benefit of vegetarian diet on human health.
Animal is the exclusive source of some essential nutrients (DHA, B12...)

Burkert et al., Plos/One, 2014

YET, ANIMAL PROTEIN HAS ALWAYS BEEN OUR STAPLE DIET



Contribution of animal protein to the daily protein intake of French (same % for lipids)

	Protéine (gramme / jour)	Proportion des protéines animales (%)	Proportion des protéines totales (%)
Porc 	19,5	28%	19%
Produits Laitiers 	16,2	23%	16%
Viande bovine 	12,3	17%	12%
Poulet 	9,7	14%	9%
Œuf 	4,8	7%	5%
Total principales sources animales	62,5	88%	60%
Autres Animaux	8,4	12%	8%
<i>Dont Poisson</i>	6,7	9%	6%
Total animal	70,9	100%	68%
Total végétal	32,9		32%
Total protéines	103,8		100%

Vegetarianism is not the solution, but we can improve nutritional and environmental quality of animal products



Towards better dietary strategies to reconcile nutrition and sustainability

How to improve our nutritional intake by optimizing our agricultural practices? Is healthy eating good for the planet? How to guide our food choices to reconcile sustainability and nutrition? For more than 3 years, teams coordinated by INRA and involving the Bleu-Blanc-Coeur, Valorex and Terrena sectors are working on these issues within the framework of the **AGRALID project**.



PUBLIÉ LE 07/11/2016

MIS À JOUR LE 08/11/2016

MOTS-CLÉS : ACIDE GRAS - ALIMENTATION - LIN - OMEGA 3 - PRODUIT ANIMAL

FRANCE : A LARGE DEFICIT OF OMEGA 3 INTAKE

Le profil moyen d'apports en acides gras (AG) issu de l'analyse des données INCA 2 par l'ONIDOL est le suivant chez l'adulte³ :

		Apport moyen quotidien INCA 2	ANC ¹
Lipides	Lipides totaux	38,0 %	35-40 %
AG Oméga 3	Acide alpha-linolénique	0,4 %	1 %
	Acide docosahexaénoïque (DHA)	137 mg	250 mg
	Acide eicosapentaénoïque (EPA)	102 mg	250 mg
AG Oméga 6	Acide linoléique	3,9 %	4 %
AG Oméga 9	Acide oléique	10,8 %	15-20 %
AG Saturés	Saturés totaux	14,4 %	≤ 12 %
	Saturés spécifiques ²	9,5 %	≤ 8 %

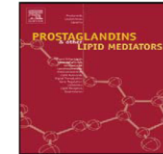
1- Actualisation des apports nutritionnels conseillés pour les acides gras ; Rapport d'expertise collective ; Anses ; Mai 2011.

Onidol, 2015

The omega 3 intake of French people is much lower than the recommended dietary intakes. **98.8% of French people have insufficient intake of alpha-linolenic acid**, whereas this fatty acid is essential because the human body can not synthesize it and it does not know Not manufacture it..



Prostaglandins and Other Lipid Mediators



Review

Prevent the cause, not just the symptoms

Bill Lands*

6100 Westchester Park Drive, #1219, College Park, MD 20740, USA

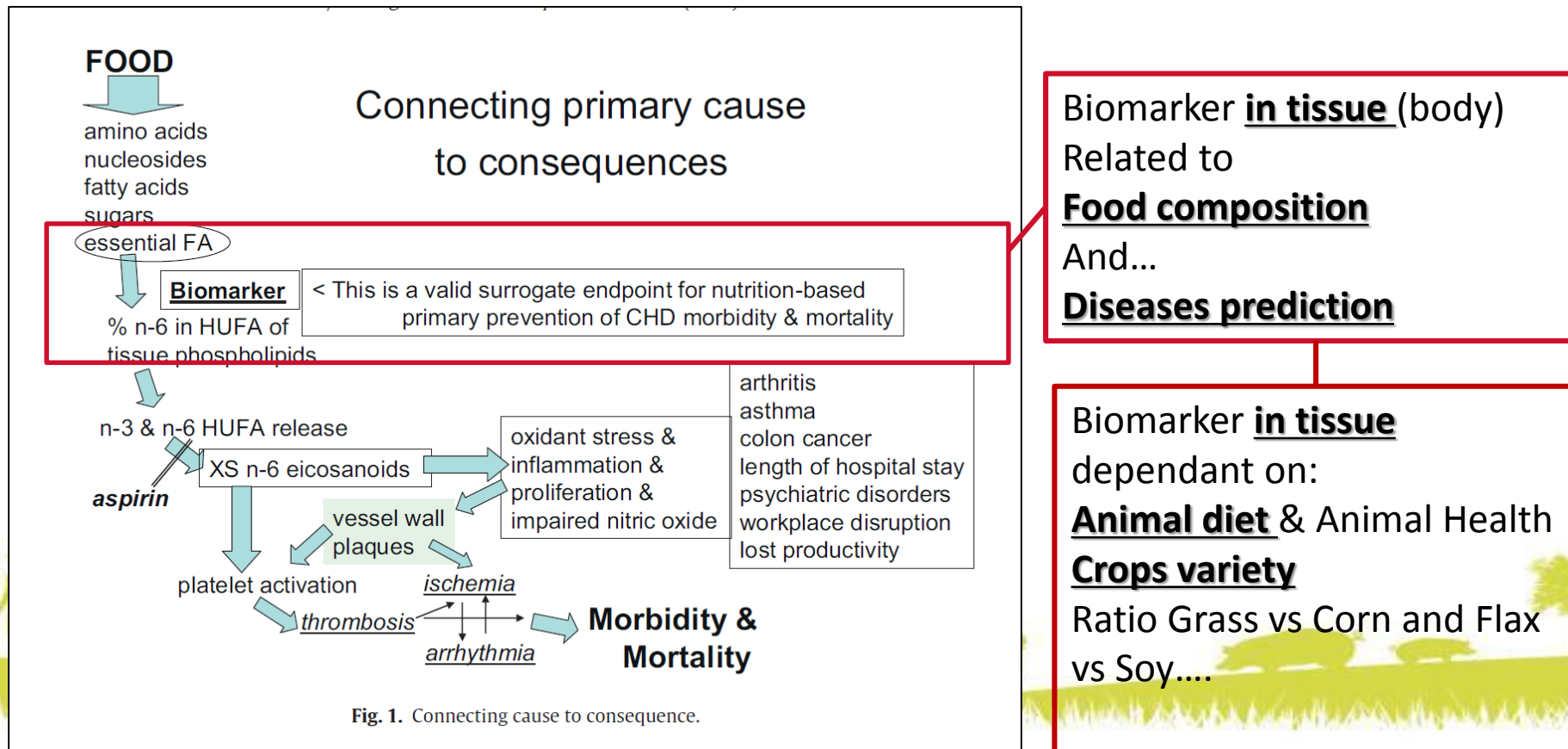


Fig. 1. Connecting cause to consequence.

THE BLEU-BLANC-CŒUR APPROACH



**Agronomy
More plant
diversity**

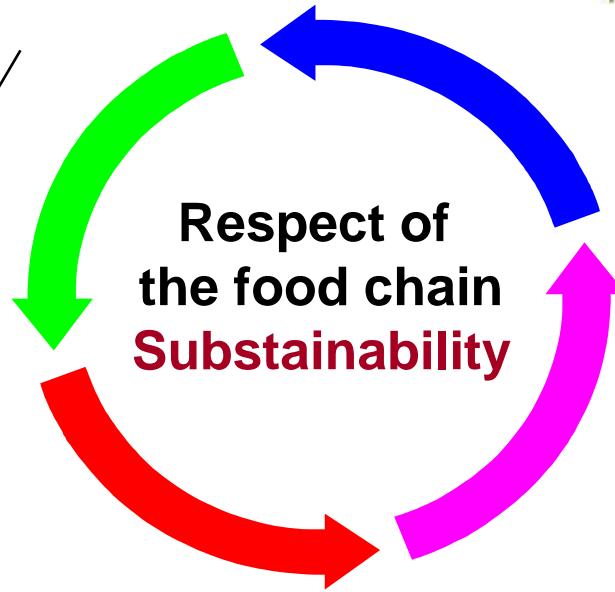
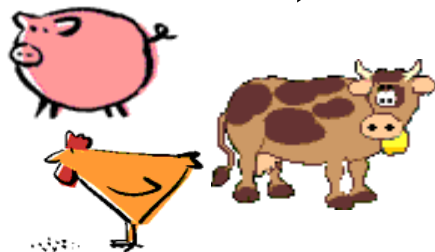


**Carbon foot print
improved**



**Passage from the
Plant to the
animal**

Ω3



Natural passage from animal to human



**Improvement
of animal health**

Ω3

**Improvement
of human health**



Annals of Nutrition & Metabolism

Original Paper

Ann Nutr Metab 2002;46:182-191
DOI: 10.1159/000065405

Received: September 12, 2001
Accepted: March 20, 2002

Effects of Introducing Linseed in Livestock Diet on Blood Fatty Acid Composition of Consumers of Animal Products

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Faouzi Safrrou^b Philippe Legrand^c

^aValorex, Combourtillé, ^bCentre d'Enseignement en Nutrition, Centre hospitalier de Bretagne sud, Lorient, et ^cLaboratoire de Biochimie ENSA/INRA, Rennes, France

Double blind cross over
Same human regimen but 2 animal diets
And : Improvement in:

- Animal lipid composition
- Human diet
- Human lipid serum composition
- Human RBC composition
- (Day 35 for human blood composition)

European Journal of Clinical Nutrition (2010), 1-8
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www.nature.com/ejcn

ORIGINAL ARTICLE

Differential impact of milk fatty acid profiles on cardiovascular risk biomarkers in healthy men and women

C Malpuech-Brugère^{1,2,3}, J Mouriot^{1,2,3,4}, C Boue-Vaysse⁵, N Combe⁵, J-L Peyraud⁶, P LeRuyet⁷, G Chesneau⁴, B Morio^{1,2,3} and J-M Chardigny^{1,2,3}

**Impact of animal diets on markers of obesity, diabete, CVD...
With same human regimen**

Lipids
DOI 10.1007/s11745-009-3376-5

ORIGINAL ARTICLE

The Consumption of Food Products from Linseed-Fed Animals Maintains Erythrocyte Omega-3 Fatty Acids in Obese Humans

Philippe Legrand · B. Schmitt · J. Mourot · D. Catheline · G. Chesneau · M. Mireaux · N. Kerhoas · P. Weill

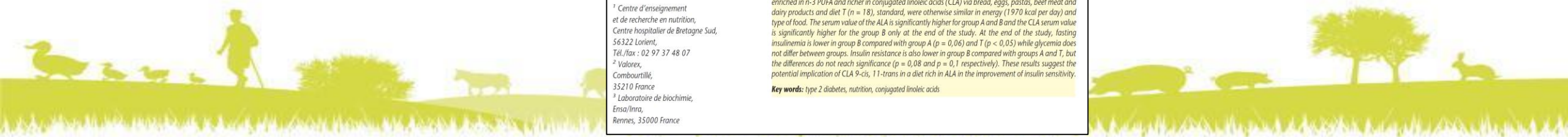
Effet d'un régime riche en acides gras ω 3 et en CLA 9-cis, 11-trans sur l'insulinorésistance et les paramètres du diabète de type 2

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Constance FERRY¹
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³ Laboratoire de biochimie, Ensa/Inra, Rennes, 35000 France

Abstract: The prevalence of type 2 diabetes, a pathology mainly induced by nutrition is increasing. In vivo studies on rat have demonstrated the interest of n-3 long chains polyunsaturated fatty acids (n-3 LC PUFA) and conjugated linoleic acids (CLA) in the diet to improve insulin sensibility. This study investigates the effect of a diet with products (linseed enriched livestock diet products and linseed bread) naturally enriched in n-3 PUFA and CLA 9-cis, 11-trans on glycemic parameters of type 2 diabetics. 44 type 2 diabetics were randomised in three parallel groups and followed a particular diet during 100 days. The three diets: diet A (n = 13), enriched in n-3 PUFA via bread, eggs and pastas, diet B (n = 13), enriched in n-3 PUFA and richer in conjugated linoleic acids (CLA) via bread, eggs, pastas, beef meat and dairy products and diet T (n = 18), standard, were otherwise similar in energy (1970 kcal per day) and type of food. The serum value of the ALA is significantly higher for group A and B and the CLA serum value is significantly higher for the group B only at the end of the study. At the end of the study, fasting insulinemia is lower in group B compared with group A (p = 0,06) and T (p < 0,05) while glycemia does not differ between groups. Insulin resistance is also lower in group B compared with groups A and T, but the differences do not reach significance (p = 0,08 and p = 0,1 respectively). These results suggest the potential implication of CLA 9-cis, 11-trans in a diet rich in ALA in the improvement of insulin sensibility.

Key words: type 2 diabetes, nutrition, conjugated linoleic acids



Topical issue on:

OLÉOPROTÉAGINEUX : SE DÉMARQUER PAR UNE DÉMARCHÉ QUALITÉ
OIL- AND PROTEIN-CROPS: DIFFERENTIATION THROUGH A QUALITY APPROACH

RESEARCH ARTICLE

OPEN ACCESS

The choice of animal feeding system influences fatty acid intakes of the average French diet

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¹ Centre d'enseignement et de recherche en nutrition humaine, centre hospitalier de Bretagne-Sud, 56322 Lorient, France

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Received 23 December 2016 – Accepted 9 April 2017

Abstract – Fatty acids intake of French adult population does not comply with the French Population Reference Intakes (PRI). The aim the study is to quantify the impact of a modification of animal feeding system on the fatty acids intake of French population. A 15-day diet representative of average consumption for the French adult male population was developed with animal products derived either from conventional production system (STD) either from a specific production system (Bleu-Blanc-Cœur* [BBC]) that acts on the fatty acids profile of animal products. The impact of a such change in feeding system on fatty acids content has been quantified. BBC diet contributes to reducing the gap between the fatty acid content of a STD diet and the PRI with highest impact on C12:0–14:0–16:0 fatty acids (−4.6 g/d, *i.e.* 63.3%), C18:3n-3 (+0.8 g/d, *i.e.* 48.2%), C20:5n-3 (+35 mg/d, *i.e.* 42.7%), C22:6n-3 (+49 mg/d, *i.e.* 35%) and the C18:2n-6/C18:3n-3 ratio (−4.9 points, *i.e.* 43.5%). The research also shows that animal products complement one another. Consuming a variety of animal source foods derived from a specific feeding practices could help reduce the gap between a recommended dietary intake of fatty acids.



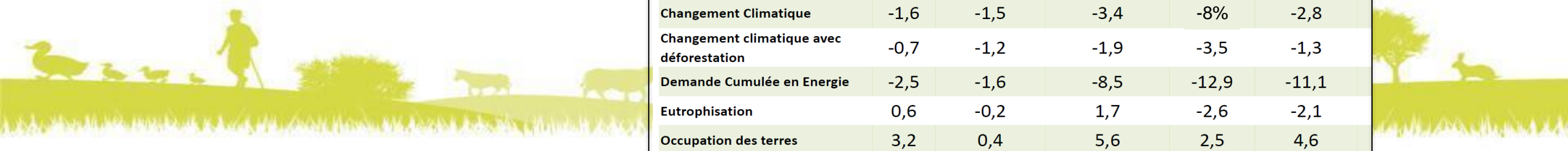
Public health and environment improvement

Impact environnemental des productions animales issues de la filière Bleu-Blanc-Cœur

Frank Pernollet, Carla R. V. Coelho, Guillaume Mairesse, Nathalie Kerhoas, Hayo M. G. van der Werf

Différences des impacts environnementaux d'animaux et de produits animaux Standard et BBC en pourcent*

	Porc	Bovins viande	Lait de vache	Œuf	Poulet
Changement Climatique	-1,6	-1,5	-3,4	-8%	-2,8
Changement climatique avec déforestation	-0,7	-1,2	-1,9	-3,5	-1,3
Demande Cumulée en Energie	-2,5	-1,6	-8,5	-12,9	-11,1
Eutrophisation	0,6	-0,2	1,7	-2,6	-2,1
Occupation des terres	3,2	0,4	5,6	2,5	4,6



IMPACTS OF A "BLEU-BLANC-COEUR" PRODUCTION MODE ON THE CO2 WEIGHT OF FOODS ... AND THEIR NUTRITIONAL DENSITY



500 tonnes de DHA en +

Équ. 45.000 tonnes de poisson

Hypothèses: 50% de la production nationale en BBC

Équ. 700 millions km voiture

Moins
(de GES)

Mais

Mieux
(en nutrition)

Yes, we can

16:0	Omega 3	Changement de l'alimentation animale	Impact final		A
			Soja / Maïs / blé	Luzerne / Lin	
-	+++	Œuf	--	+	-8 %
--	+	Produits laitiers	-	+	-3,38%
-	++	Poulet	-	+	-8%
-	+	Bœuf	-	+	-1,65%
-	++	Porc	-	+	-1,55%

85.000 tonnes de CO2 en -

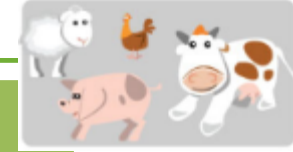
967.000 tonnes de CO2



AGRALID
Évaluation nutritionnelle, environnementale et socioéconomique des menus, vers une évolution durable des pratiques agricoles et des recommandations nutritionnelles



THE BLEU-BLANC-CŒUR ORGANIZATION



An association

(farmers, producers, consumers, doctors and health specialists, chefs...)



With a clear objective:

IMPROVING FEED

(production methods, farms, feed)

Animals' PNNS

(National Nutrition Health Program)

Impacting on:

Animal Health

(increase of immunity, fertility, resistance to antibiotics...)

Associated collateral benefits

Environment

Reduced carbon footprint

Protein autonomy

(less imported soja – less GMO's)

Superior qualities over
taste and technology

Economy

(circular / virtuous economy, agro foodchain, farmers...)

Consequence on:

NUTRITION

(nutritional density improved in plates = health prevention & reduced inflammation)

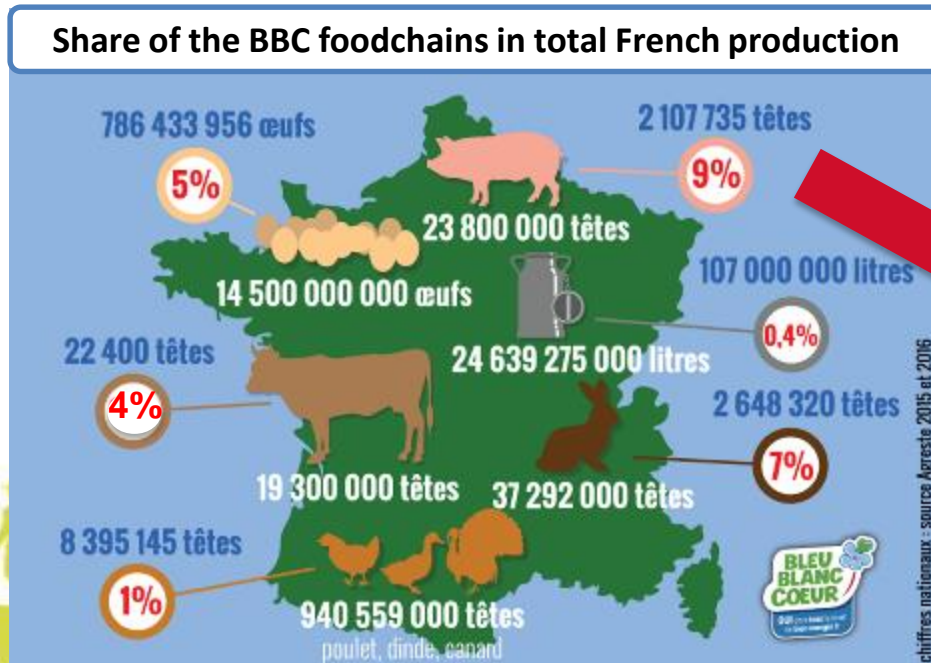


BLEU-BLANC-CŒUR: A HIGH-GROWTH BRAND



Activity Growth

+21%
in 2016



An expansion of the agro foodchains linked to a strong rise in brand awareness

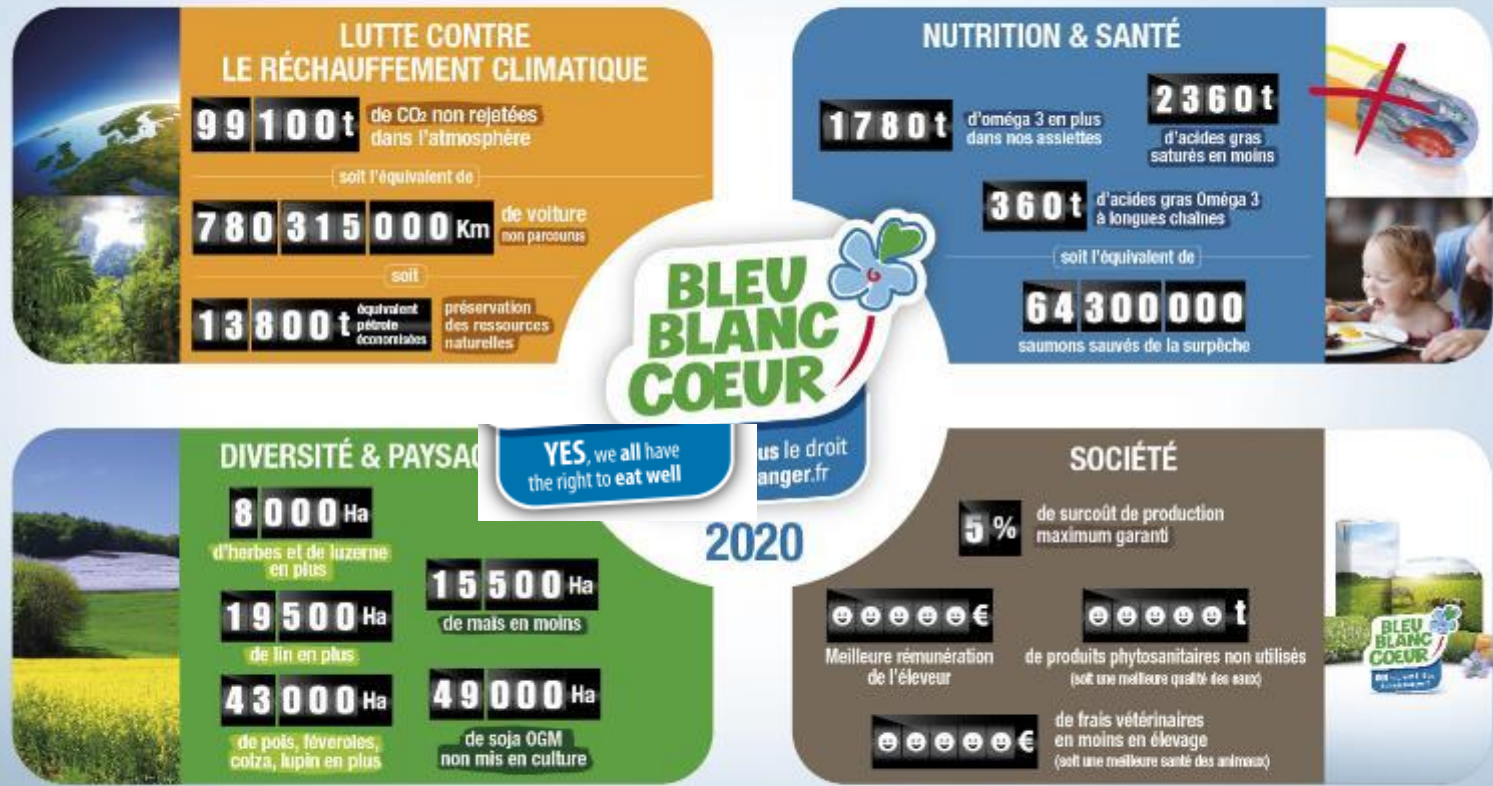


EXPERTS' RECOGNITION FOR PUBLIC HEALTH AND ENVIRONMENT IMPROVEMENT



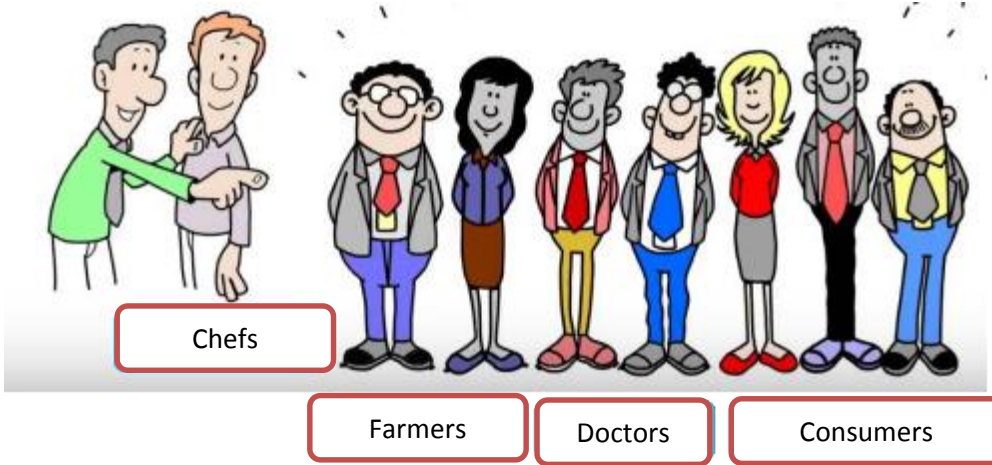
BLEU-BLANC-CŒUR DEVELOPED A PROCESS TO CALCULATE ITS PRODUCTS' NUTRITIONAL, ENVIRONMENTAL AND SOCIETAL IMPACTS

This method is approved by the Nutritional Expert Committee (PNA) from the Agricultural, Environment and Health French Ministries



BLEU-BLANC-CŒUR LEADS THE WAY FOR A VIRTUOUS AGRICULTURE NURTURING OUR LANDS, ANIMALS AND MAN'S HEALTH

A WINNING COMMUNICATION STRATEGY



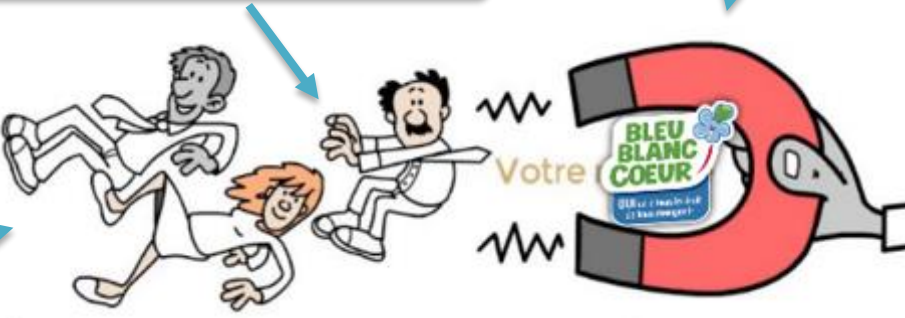
A digital app:
« Where to find the products »



A reassuring guarantee



Staging of our community



**L'ALIMENTATION
IL Y A CEUX QUI
S'EN INQUIÈTENT
ET CEUX QUI
AGISSENT.**



**CHEZ BLEU-BLANC-CŒUR
ON PRÉFÈRE AGIR !**



Yes, it is possible to respond honestly to the legitimate expectations of society in terms of ethics, animal welfare and health, quality measurement, environment, prevention of diseases of civilization, local production

With a logo, and an approach:

- Built on a collaborative research platform
- With a double obligation of means and results (with an objective measure of the quality)
- Managed by a collective approach where everyone plays his role
- Diffused via our communities and thanks to the digital

With a lot of “with an plus” and not only with “without and no”

With an adapted communication and a strong scientific basis.



Thanks for your attention

