REGIONAL BREEDING INDUSTRY AND GOALS

perspective from Brown Swiss breeding in Italy

Attilio Rossoni - ANARB

ITALIAN BROWN CATTLE BREEDERS‘ ASSOCIATION

The National Association, founded in 1957, has the following goals:

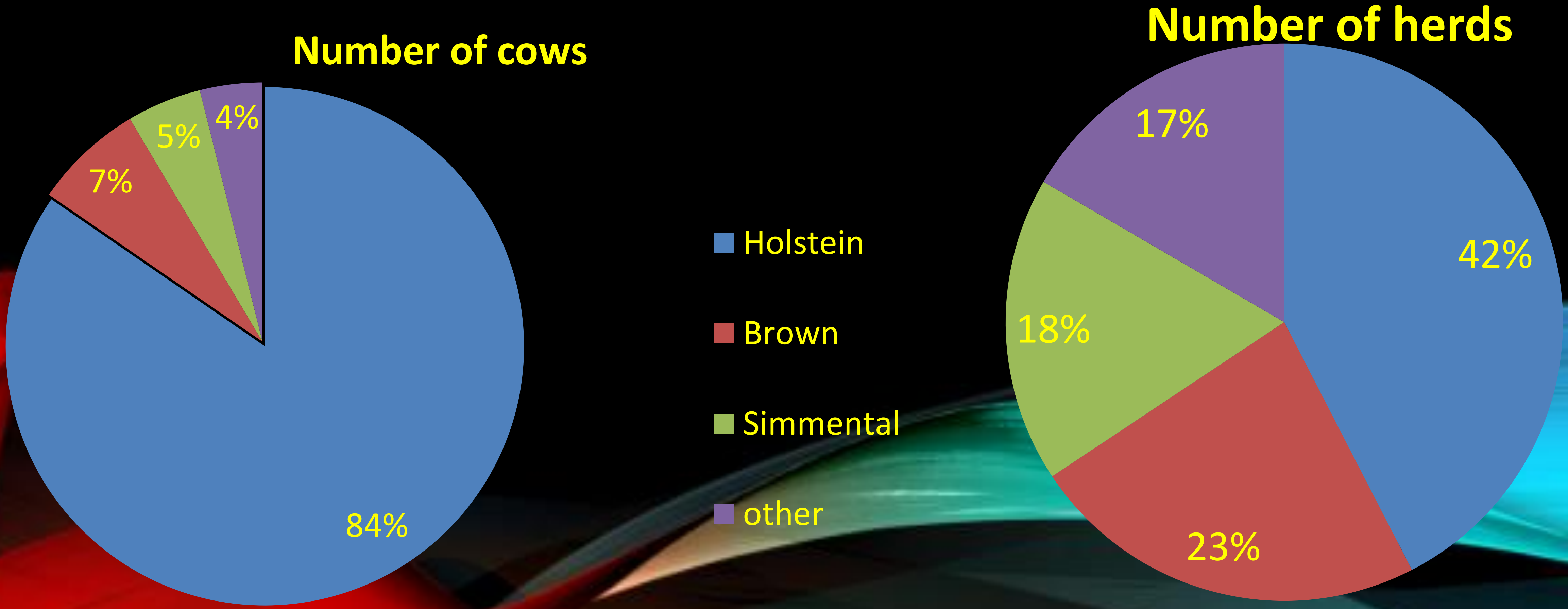
- the improvement of the Breed also view of a higher economic value
- the management of the Herdbook
- the promotion of studies and researches
- management of the Genetic Centre
- the promotion, also cooperating with other bodies, of Brown cattle

ITALIAN BROWN

- About 500.000 strong, with 400,000 cows
- 104,000 of which are registered in the herdbook
- More than 90% of these are bred artificially.
- about 8,000 breeders which adhere to the Genealogical Register
- The Italian Brown breed gives outstanding milk production of high quality - with cheese yields and high environmental adaptability.

ITALIAN MILKING COWS POPULATION

- 1.754.000 milking cows
- 1.335.000 in the herdbook and in recording scheme



ERENT
NTAL


SVIZZERA
Berna
Losanna
UNGHE
29193
TRENTINO-ALTO ADIGE
1758
SLOVENIA
Zagabria
CROAZIA
VALLE D'AOSTA
LOMBARDIA
Milano
Brescia
Novara
VENETO
Vicenza
Trieste
Venezia
Padova
8666
16676
Verona
Torino
2708
PIEMONTE
Rijeka
Novi Grad
EMILIA
Genova
Bologna
7486
Ravenna
Forlì
Rimini
BOSNIA-ERZEGOVINA
372
COSTA AZZURRA
Mar Ligure
Nizza
Livorno
Firenze
TOSCANA
ITALIA
42
211
CORSICA
Pescara
ABRUZZO
1307
Mare Adriatico
Roma
LAZIO
MOLISE
1167
Foggia
CAMPANIA
769
11666
Bari
Sassari
Napoli
Salerno
955
PUGLIA
SARDEGNA
1709
Mar Tirreno
CALABRIA
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Cagliari
Mar Mediterraneo
Palermo
Messina
SICILIA
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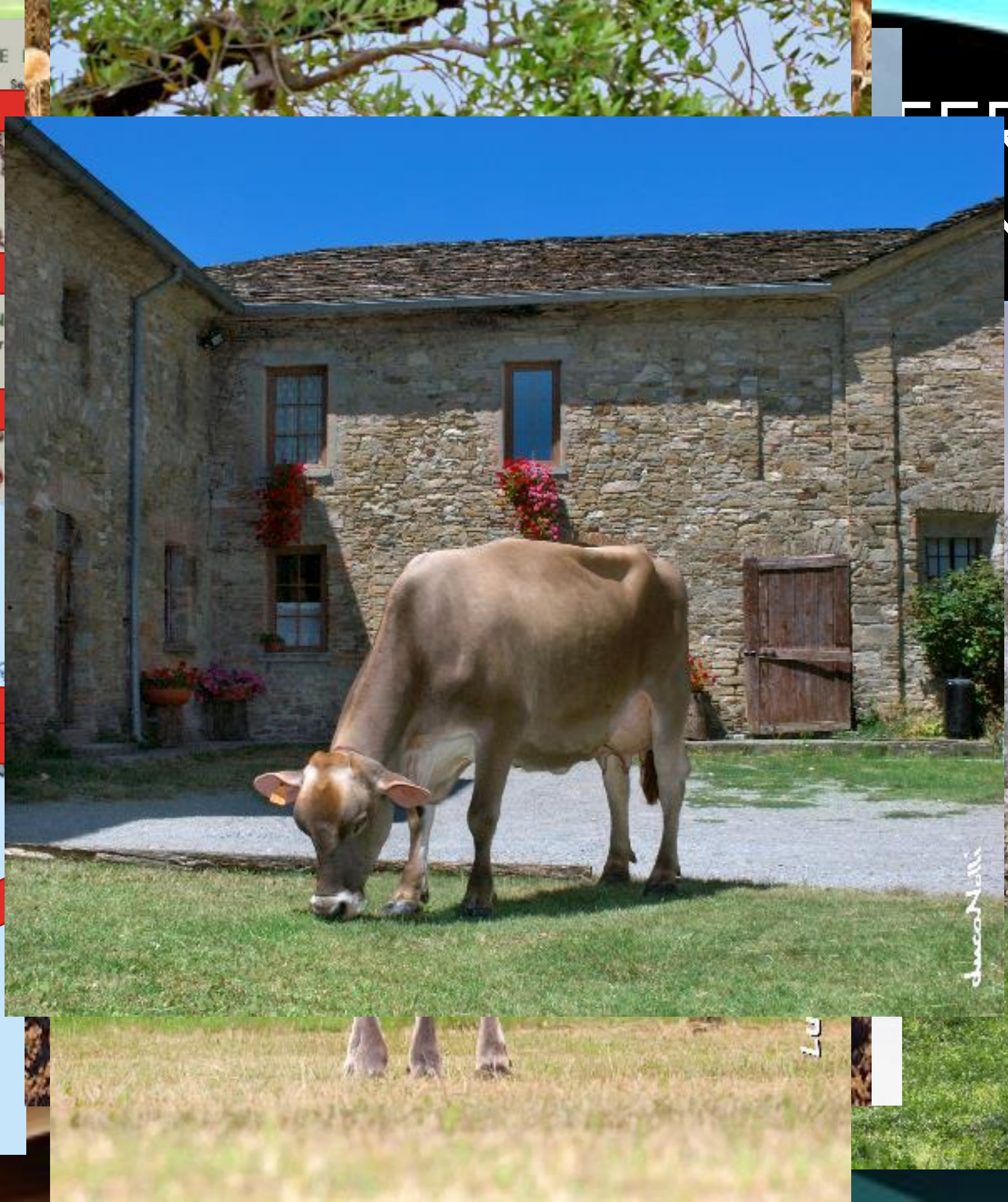
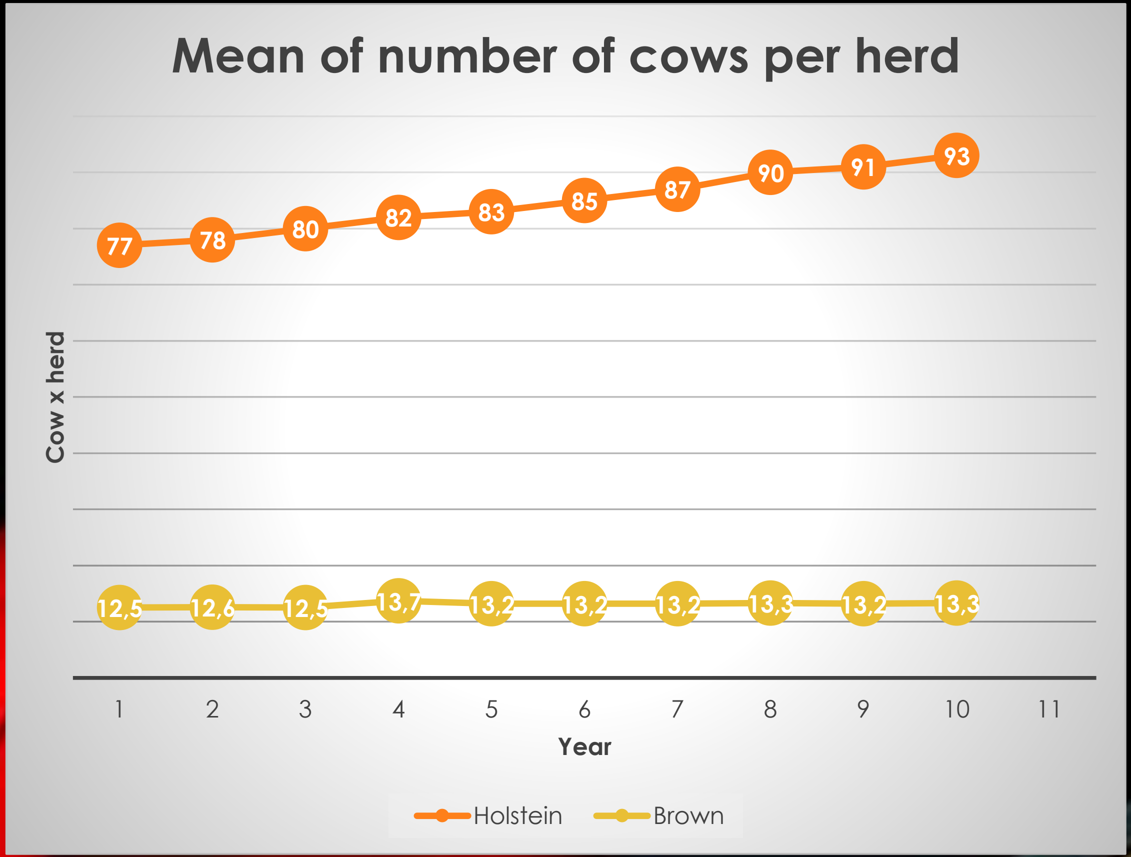
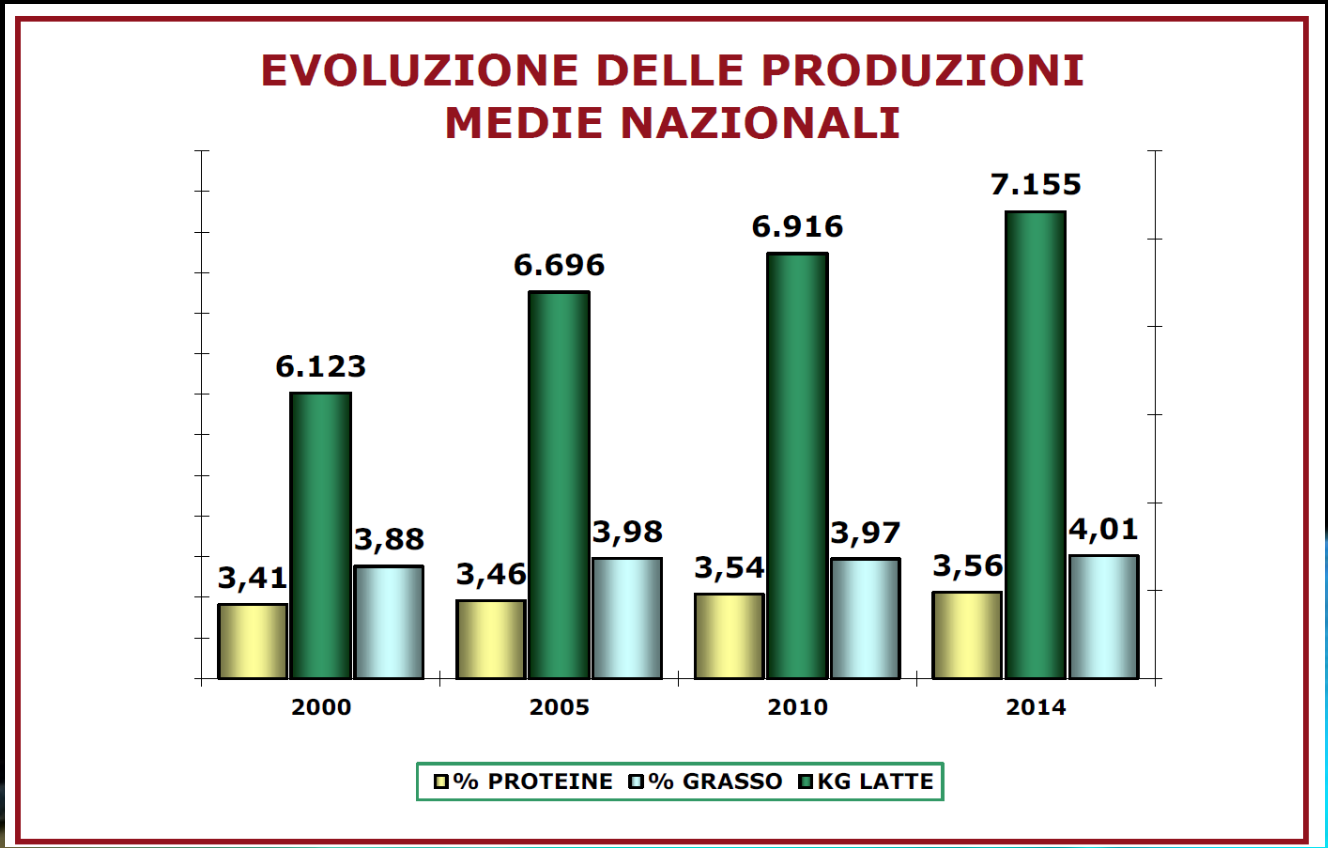
Catania
Biserta
Annaba
Tunisi
TUNISIA

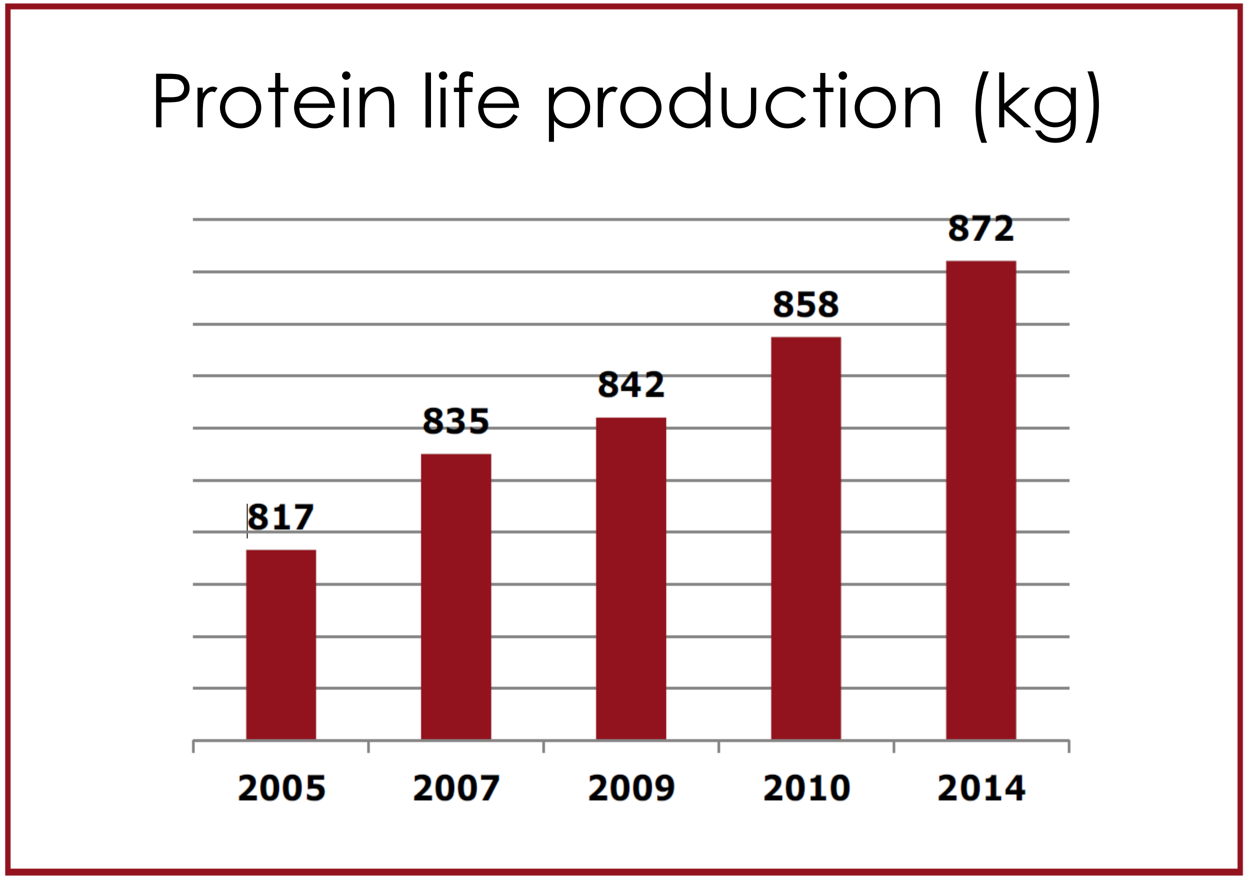


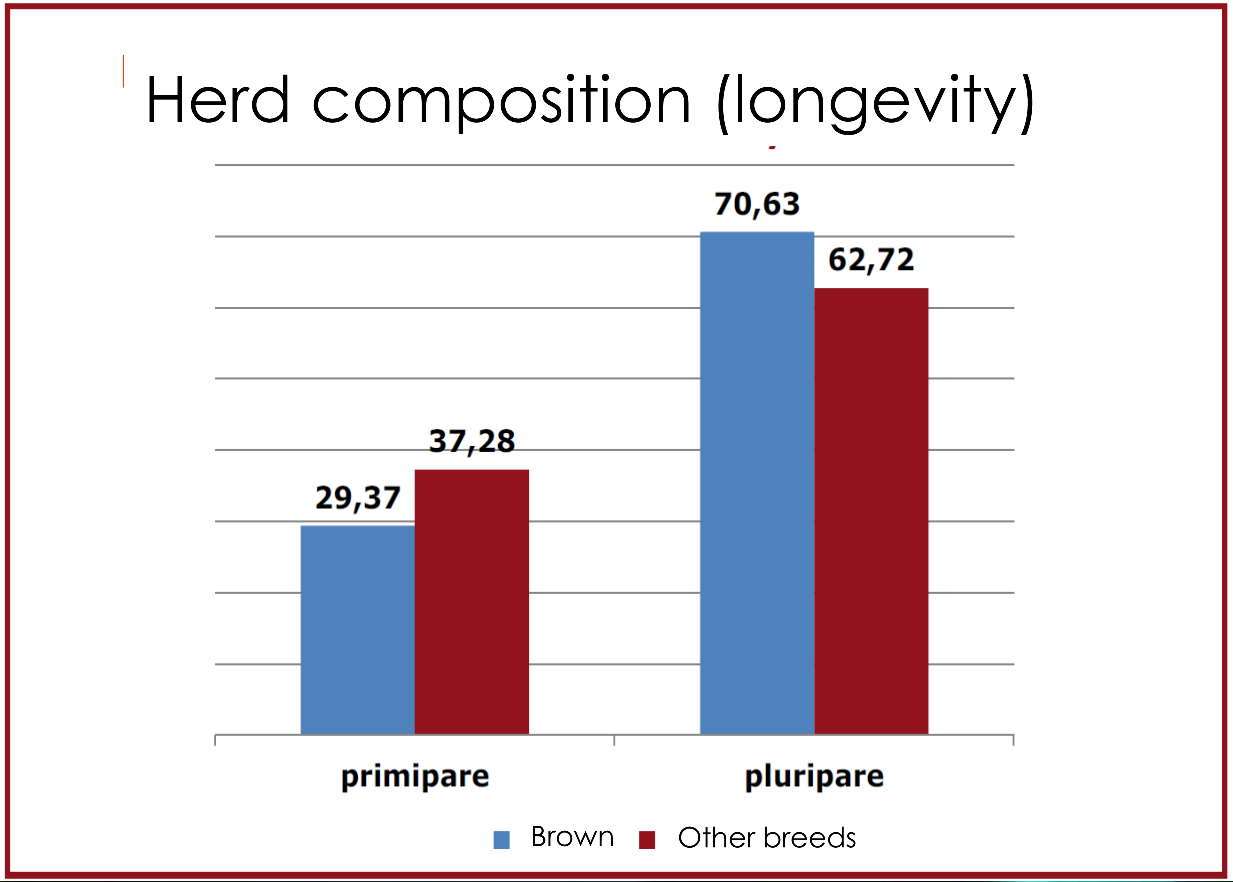
PRODUCTIVE CHARACTERISTICS





PRODUCTIVE CHARACTERISTICS





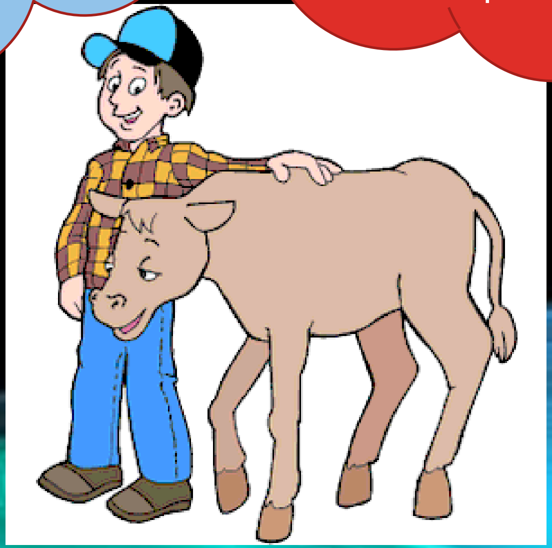
An FP7 financed Project

RUMINOMICS

Connecting the animal genome, gastrointestinal microbiomes and nutrition to improve digestion efficiency and decrease the environmental impacts of ruminant livestock production

improve digestion efficiency
=
Less corn
=
Less costs

decrease the environmental impacts
=
More costs
=
Who pays???



The environmental impact of dairy production: 1944 compared with 2007[1]

J. L. Capper,* R. A. Cady,† and D. E. Bauman*[2]

*Department of Animal Science, Cornell University, Ithaca, NY 14853; and †Elanco Animal Health, Greenfield, IN 46140

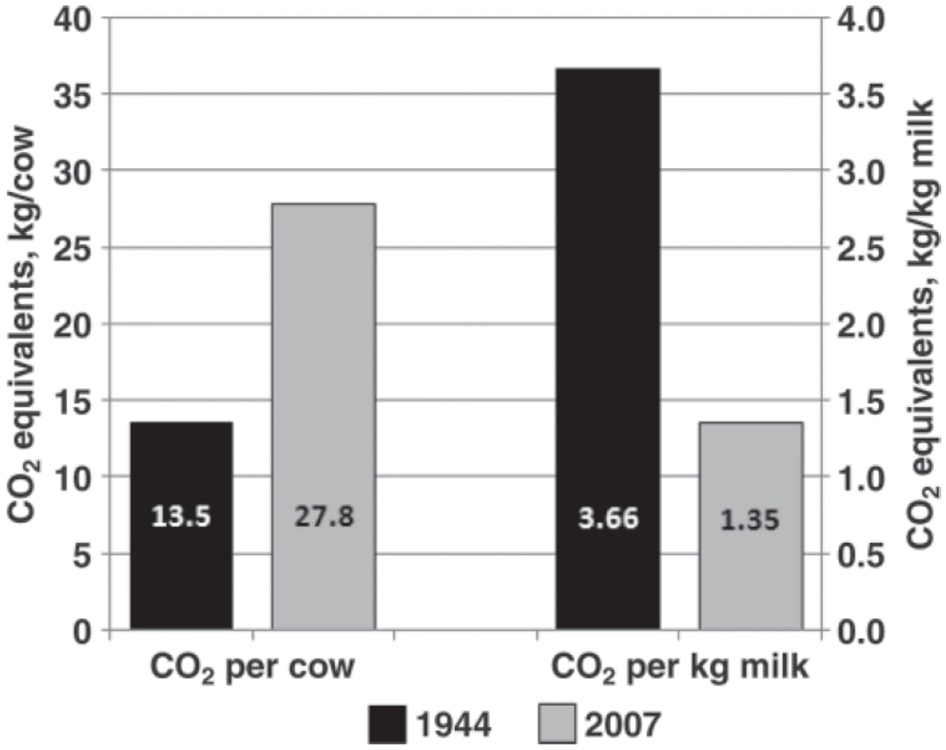


Figure 3. Carbon footprint per cow and per kilogram of milk for 1944 and 2007 US dairy production systems. The carbon footprint per kilogram of milk includes all sources of greenhouse gas emissions from milk production including animals, cropping, fertilizer, and manure.

J. Dairy Sci. 97:3231–3261
http://dx.doi.org/10.3168/jds.2013-7234

Invited review: Enteric methane in dairy cattle production: Quantifying the opportunities and impact of reducing emissions

J. R. Knapp,*[1] G. L. Laur,† P. A. Vadas,‡ W. P. Weiss,§ and J. M. Tricarico#
*Fox Hollow Consulting LLC, Columbus, OH 43201
†Gwinn-Sawyer Veterinary Clinic, Gwinn, MI 49841
‡USDA Agricultural Research Service Forage Research Center, Madison, WI 53706
§Department of Animal Sciences, The Ohio State University, Wooster 44691
#Innovation Center for US Dairy, Rosemont, IL 60018

Genetic selection for feed efficiency, heat tolerance, disease resistance, and fertility can augment selection for milk yield in reducing enteric CH_4/ECM with the potential of 9 to 19% reductions (Figure 7). To achieve enteric CH_4/ECM reductions through genetic selection requires appropriate supporting management, including feeding and nutrition, health, reproduction, and housing facility design. Feeding and nutrition have modest

NOT ALL THE MILK ARE THE SAME

	Cow 1	Cow2
Milk kg	**40**	**27**
% protein	**3.25**	**3.83**
% fat	**3.9**	**4.29**
% casein	**2.3**	**3.1**
K - casein	**AA**	**BB**
Index if casein	0.71	0.81
Kg caseina	0.92	0.84
Kg of cheese	2.76	2.51
effect k-casein	2.76	2.76
1 lactation (305d)		
Milk kg	12200	8235
Protein kg	991	1168
Fat kg	1190	1308
Cheese kg	**842**	**842**

Nutrition Requirements

	Cow 1	Cow 2
Dry matter	22.1	19.7
UFL -23%	**22.34**	**17.41**
Protein -25%	4.146	3.139
Fiber	4.045	3.448
ufl/dry matter	1.011	0.884
% of protein	19%	16%

LONGEVITY – FERTILITY-HEALTH

INVITED REVIEW: QUANTIFYING REDUCTIONS IN ENTERIC METHANE EMISSIONS FROM DAIRY

Table 4. Reducing age at first calving and culling frequency reduces the number of replacements needed and enteric CH_4 emissions per unit of ECM (CH_4/ECM) at the herd level

	Age at first calving (mo)			
Culling rate (%)	22	24	26	28
	No. of replacements needed per 100 cows[1]			
25	54	59	64	69
30	65	71	76	82
35	75	82	89	96
40	86	94	102	110
	Replacement contributions to whole-herd enteric CH_4[2] (%)			
25	19.6	21.0	22.4	23.7
30	22.7	[illegible]	25.7	27.2
35	25.5	27.2	[illegible]	30.3
40	28.1	29.9	31.6	33.2

-40%

[1]Calculated from St-Pierre (1998), based on 5% of heifers born dead on arrival and 10% culling and mortality.

[2]Calculated based on number of replacement heifers required; lactating cows with mature BW = 680 kg, producing 31.8 kg of ECM; DMI calculated according to NRC (2001); and methane production = 5.6% gross energy intake for lactating cows, 7.0% for nonlactating mature cows, and 8.0% for replacement heifers.

WHAT WE ARE DOING

BREEDING OBJECTIVE

objective	Trait used
Increase cheese quality and quantity	- Kg of protein - % protein - K-casein
Increase cheese yield	- % protein - k-casein
Increase Longevity	- Direct longevity - Conformation - Food and legs - SCS
Decrease Incidence of mastitis	- SCS
Decrease managment costs	- Milkability -Udder conformation -SCS

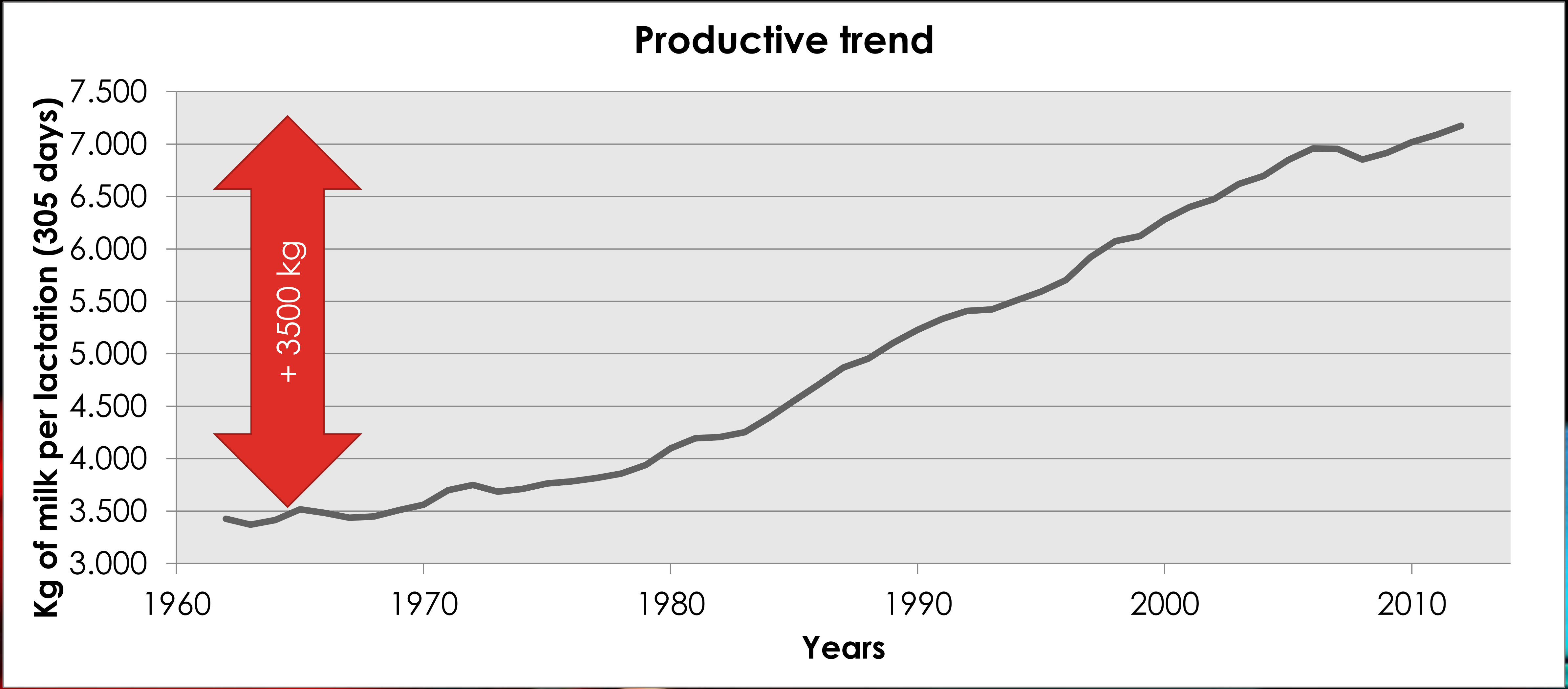
ITE:TOTAL ECONIC INDEX

INCOMES		COSTS				
54.5%		45.5%				
Protein Kg	Protein %	Longevity	Milking speed	Somatic cell	Overall conformation	Pastern
45.5%	9%	18.5%	9 %	-4.5%	9 %	4.5%

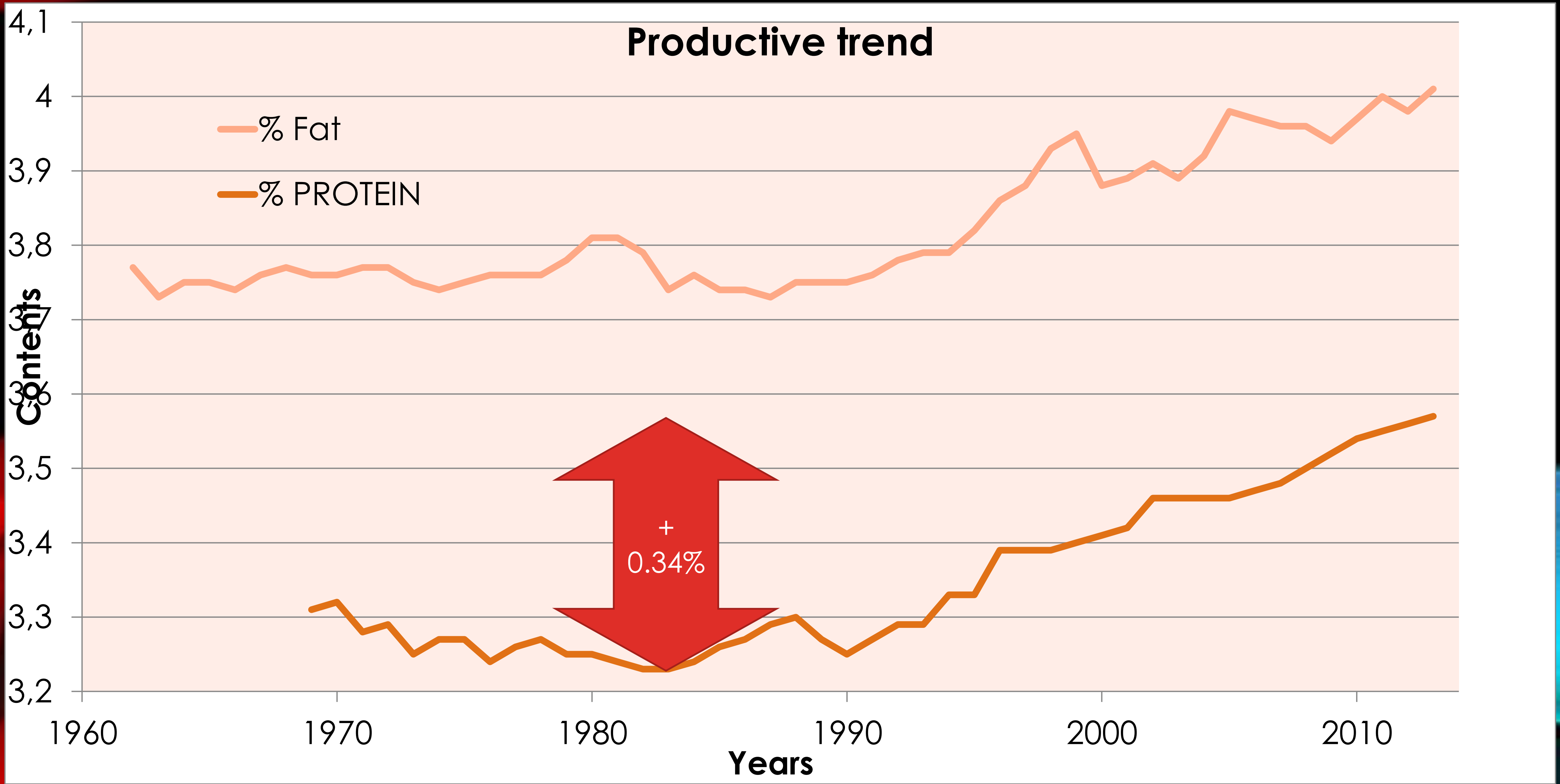
if the sire is K-casein AB, kg of protein is increased by 2.5%

if the sire is K-casein BB, kg of protein is increased by 5%

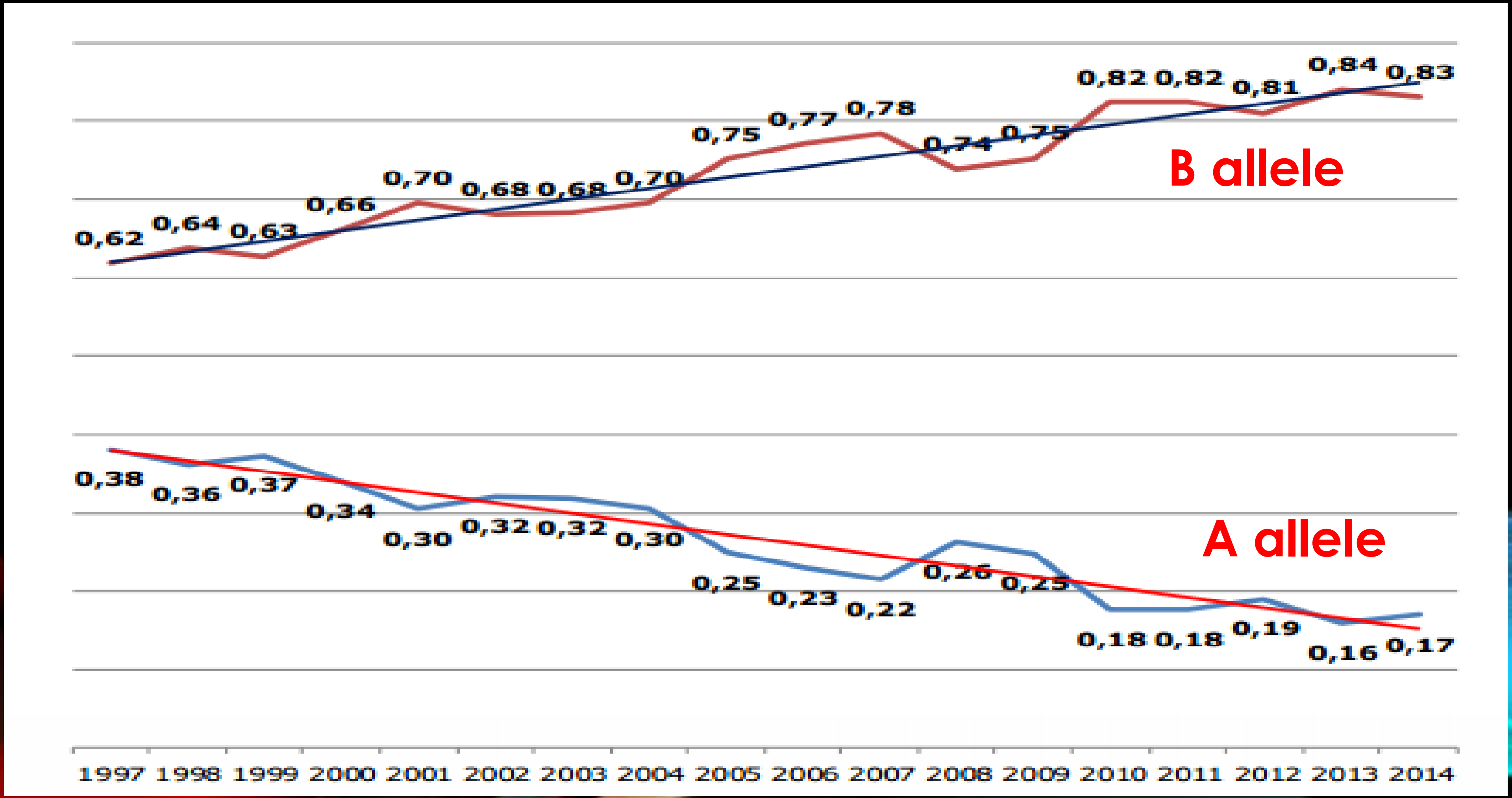
MILK PRODUCTION



MILK QUALITY



K-CASEIN ALLELE FREQUENCY BY BIRTH YEAR



WORK IN PROGRESS

- Project with University of Sassari to investigate the feed efficiency of young sires at the Genetic Centre.

OPEN QUESTIONS

- How we can convince farmers of the importance of reducing carbon footprint?
- Is the majority of people ready to pay more for a “different food” or it’s only a niche market?

OPEN QUESTIONS

- The feeling of most farmers:
  - Ecologist (They live in cities, They eat in fast foods, They use good foods for pets and They might even drive a Volkswagen!) they accuse us to be polluters???
- A possible way-out:
  - In the future the word will need more food
  - we have the same amount of air, land a water
  - we must optimize their use
  - Farmer: you are one of the major player