



LATTE NOBILE

Un modello universale per un prodotto
locale

Roberto Rubino

ROMA 2015

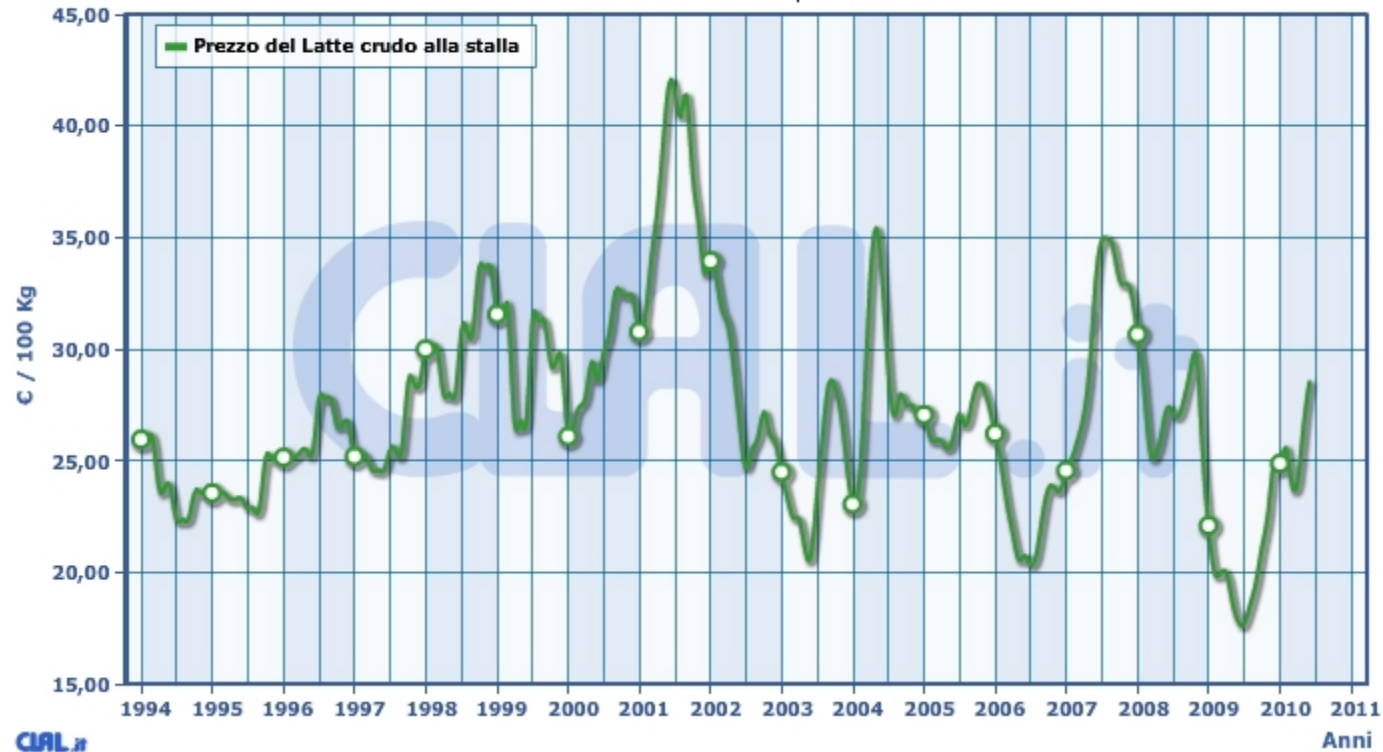
Il latte è
tutto uguale?



USA (23 Stati) - Quadro storico dei prezzi del Latte crudo alla stalla (€)

Fluid Grade Milk

Fonte: AMS USDA Dairy Markets News



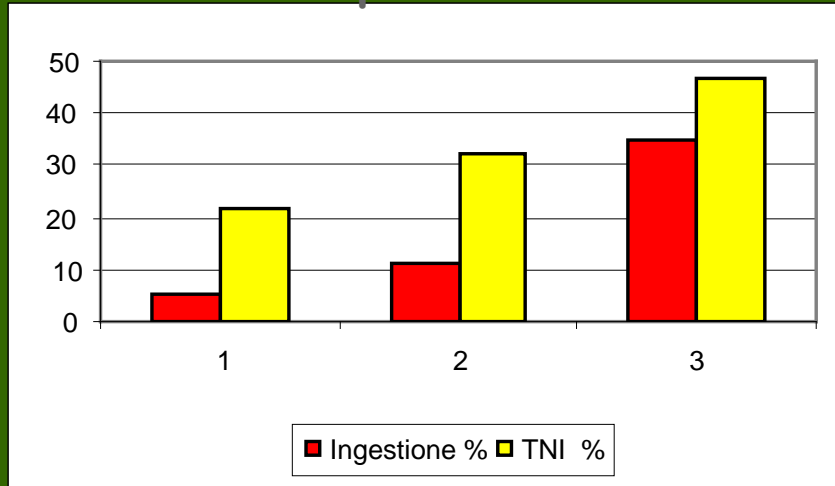


**Il Latte non è
tutto uguale**

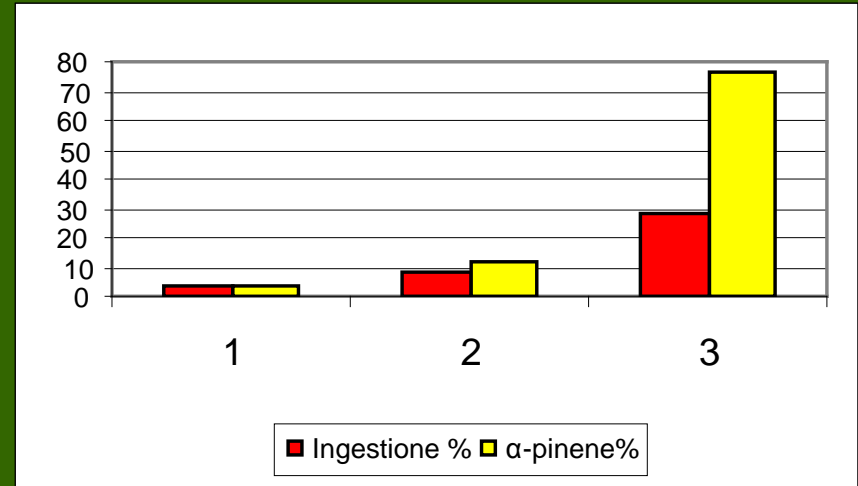


Relazione tra alcune essenze singole e il contenuto di VOC nel latte e nel formaggio

Asperula



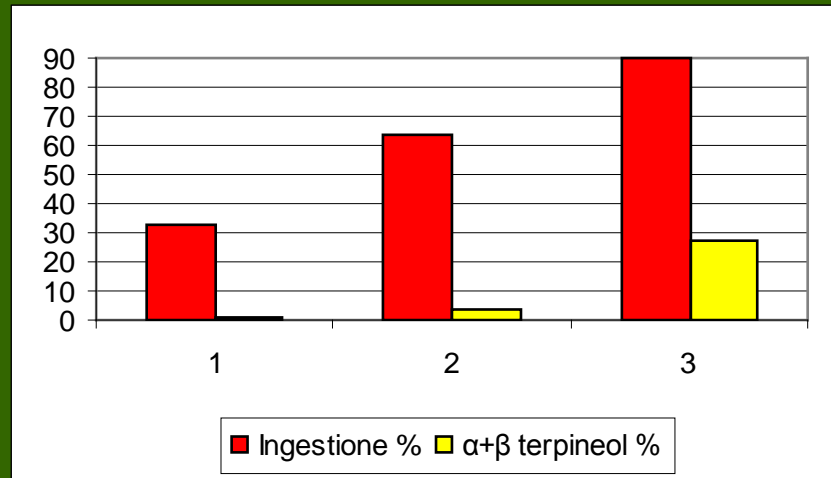
Geranio



Relazione diretta tra erba ingerita e specifici terpeni nel latte

Un incremento nella dieta di Asperula da 11% a 35% determina un incremento dal 32% al 47% di un terpene non identificato (TNI)

Dactylis



Non c'è relazione

	Commerciali					Nutraceutiche				VOC
	PH +	grasso +	proteine +	Lattosio +	LINEAR -	Saturi -	Omega6/ Omega3 -	CLA +	Trombo genic Index -	
pH	1	0.04	-0.11	-0.33	0.17	0.48	0.21	-0.32	0.28	-0.16
grasso	0.04	1	0.44	0.09	0.09	0.21	-0.20	-0.16	0.08	0.01
proteine	-0.11	0.44	1	0.38	-0.12	0.25	-0.41	-0.01	-0.08	-0.05
Lattosio	-0.33	0.09	0.38	1	-0.37	-0.17	-0.38	0.35	-0.25	0.20
Linear score SC	0.17	0.09	-0.12	-0.37	1	0.10	0.24	-0.26	0.15	-0.27
Saturi	0.48	0.21	0.25	-0.17	0.10	1	0.12	-0.72	0.54	-0.18
Omega6/Omega3	0.21	-0.20	-0.41	-0.38	0.24	0.12	1	-0.41	0.61	-0.11
CLA	-0.32	-0.16	-0.01	0.35	-0.26	-0.72	-0.41	1	-0.56	0.23
Trombogenic Index	0.28	0.08	-0.08	-0.25	0.15	0.54	0.61	-0.56	1	-0.13
VOC_Generale	-0.16	0.01	-0.05	0.20	-0.27	-0.18	-0.11	0.23	-0.13	1
Qualità	+	+	+	+	-	-	-	+	-	+



Latte Nobile

- **Disciplinare**
- **<5.000 l di latte**
- **70% erba o fieno**
- **Minimo 4 erbe**



Gli Indicatori di qualità



Rapporto

Omega-6/omega-3

< 5

Evoluzione rapporto LN

Campione	Ac. linoleico $\omega 6$	Ac. linolenico $\omega 3$	$\omega 6 : \omega 3$
07.02.13 media	2,12 \pm 0,04	0,28 \pm 0,01	7,50
13.03.13 media	1,87 \pm 0,02	0,36 \pm 0,01	5,20
17.05.13 media	1,71 \pm 0,03	0,38 \pm 0,00	4,50
03.06.13 media	1,73 \pm 0,04	0,41 \pm 0,04	4,20
18.07.13 media	1,53 \pm 0,09	0,46 \pm 0,04	3,20
02.09.13 media	1,60 \pm 0,00	0,63 \pm 0,00	2,54
03.10.13 media	1,43 \pm 0,04	0,52 \pm 0,01	2,75
05.11.13 media	1,52 \pm 0,06	0,60 \pm 0,01	2,53

Rapporto Omega6/omega3 in latte Alta Qualità

Campione	Ac. linoleico $\omega 6$	Ac. linolenico $\omega 3$	$\omega 6 / \omega 3$
17.10.13 media*	3,15 \pm 0,03	0,28 \pm 0,00	11,25
14.01.14 media*	2,88 \pm 0,08	0,31 \pm 0,03	9,29
10.22.14 media*	2,95 \pm 0,18	0,31 \pm 0,01	9,51
21.03.14 media**	2,30 \pm 0,04	0,40 \pm 0,01	5,75
24.04.14 media***	3,20 \pm 0,08	0,48 \pm 0,01	6,67

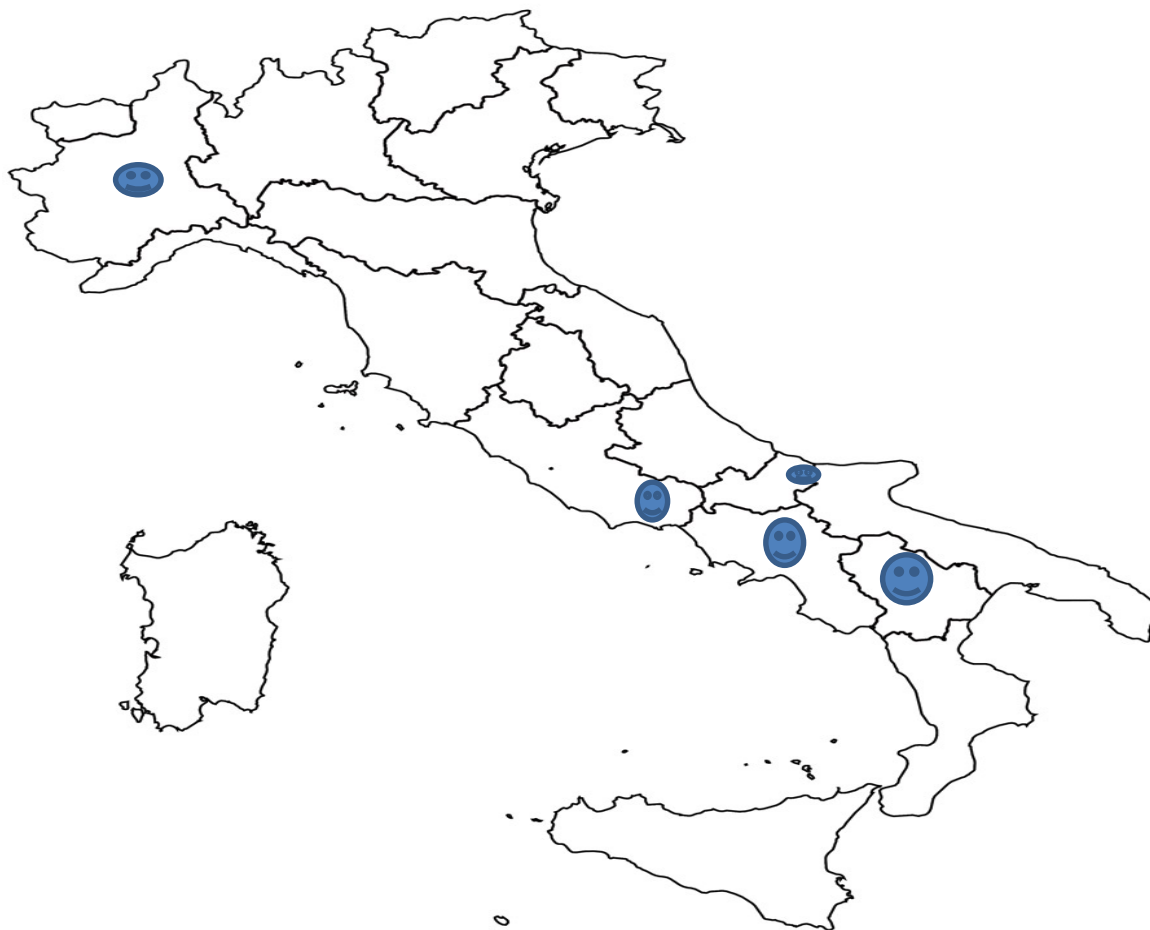


Grado Protezione Antiossidante

(Vit. E+ Betacarotene/Colesterolo)

Grado di Protezione Antiossidante

Data prelievo 09.03.14	µg/ml di latte	µg/100g di grasso	GPA
β-carotene	19.50 ±0,21	437,50±5,1	
α-tocoferolo	130,30±1,70	3080,72 ±21,3	
13-cis-retinolo	22,60 ±0,12	532,2± 17,1	
Trans-retinolo	22,10 ±1,50	540,54± 18,2	
Colesterolo mg/ml	10,9±0,10	–	18,57



Compound	Chem Class	Odour perception	LRI ^a	Ident ^b	A	B	D	E	F	G	H	I	L	M
butyric acid	acid	rancid	818	PI		x	x	x	x					x
phenyl acetic acid	acid	soap,spicy	1267	PI						x			x	
methyl-2-butenol	alcohol	herbaceous	779	PI				x		x				
heptanol	alcohol	onion	926	PI						x			x	
2-ethyl hexanol	alcohol	green	1032	PI,MS		x								
2-phenyl ethyl alcohol	alcohol	honey,floral	1116	PI					x					
2,6-nonadienol	alcohol	cucumber	1163	PI						x	x		x	
2-octenal	aldehyde	green	1061	PI						x	x			
3,6-nonadienal	aldehyde	floral	1096	PI	x									
perilla aldehyde	aldehyde	spicy	1274	PI		x								
decadienal	aldehyde	rancid,fat	1322	PI								x		x
o-amino acetophenone	aromatic hyd	sweet	1313	PI					x		x			
ethyl butyrate	ester	apple	798	PI	x	x	x			x	x			
butyl acetate	ester	pear	816	PI	x	x	x	x	x	x	x	x	x	x
ethyl methyl butyrate	ester	apple	848	PI	x			x		x	x			
methyl-2-(methylthio)-acetate	ester	fried,potato	891	PI		x	x			x			x	
ethyl isohexanoate	ester	fruity	967	PI						x			x	
ethyl hexanoate	ester	honey,floral	1001	PI				x						
hydroxy pentanone	ketone	mushroom,earth	824	PI	x			x		x			x	
octadienone	ketone	floral	980	PI					x		x			
2-nonanone	ketone	hot milk	1104	PI	x								x	
ethyl dimethyl pyrazine	pyrazine	potato	1087	PI					x		x			
acetyl pyrroline	pyrrole	fried,nut	924	PI						x			x	
propionyl pyrrole	pyrrole	roast	1026	PI						x				
dimethyl disulfide	sulfur	garlic	777	PI						x	x			
mercapto pentanone	sulfur	onion	899	PI					x		x			
thenylthiol	sulfur	sulfur	1077	PI					x		x			
sulfurol	sulfur	garlic	1260	PI	x									
methylfuranthiol	sulfut	garlic	865	PI								x		x
limonene	terpene	floral	1035	PI				x		x	x			
(Z)-linalool oxide	terpene	soap,floral	1070	PI		x	x		x					x
(E)-rose-oxide	terpene	green	1132	PI				x						
(Z)-limonene oxide	terpene	citrus	1136	PI					x	x	x	x		x
carveol	terpene	fresh	1198	PI					x					
linalool oxide	terpene	floral	1214	PI		x	x	x		x	x		x	x
myrtenal	terpene	floral,spicy	1235	PI	x									
1,3-p-menthadien-7-ol	terpene	spicy	1292	PI				x						
acethyl thiazole	thiazole	green,earthy	1019	PI	x									
Totale					9	8	6	10	11	17	14	4	10	7

^a LRI, Linear Retention Index, capillary column HP-5. ^b Identification: MS (Wiley library);
PI (Internet database:flavornet); ST (standard solution); * LRT calculated on the normal alkanes RT



Grazie

