Traditional Sicilian Cheeses: development of a knowledge base to maintain the tradition while controlling quality and safety.

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Outline

• The Beginning: an idea and a dream
• Understanding Ragusano cheese and the tradition.
• Formation of CoRFiLaC
• Research Collaboration
Early 1990’s

– a new student arrives at Cornell University in Ithaca, New York from Sicily.

**Primary** interest: dairy cattle management and nutrient utilization by dairy cattle in support of milk production.

**Secondary** interest: milk quality, cheese quality, cheese yield for a farmstead, artisan cheese.
The Beginning: an idea and a dream

• Early 1990’s
  – Progetto Ibleo
    Develop a research and extension program based in Ragusa, Italy to help local farmers improve their economic performance through better farm management and improved control of yield and quality of Ragusano cheese. This concept was integrated into the training and research of Giuseppe Licitra’s PhD degree program at Cornell University.
The Beginning: an idea and a dream

• Early 1990’s
  – Progetto Ibleo
  Primary participating faculty at Cornell in the first phase
  Peter VanSoust
  Tony Oltenacu
  Dave Barbano
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What is Ragusano Cheese?

An aged pasta filata cheese made from raw milk on farms generation after generation.
Understanding Ragusano cheese and the tradition.

First Step – document the cheese making procedures.

Technology to Produce Ragusano Cheese: A Survey

GIUSEPPE LICITRA,1 GUGLIELMO PORTELLI,1 PATRIZIA CAMPO, GIOVANNI LONGOMBARDO, GIOVANNI FARINA,1 STEFANIA CARPINO, and DAVID BARBANO.


Consorzio Ricerca Filiera Lattiero Caseria—Progetto Ibleo, Viale Europa 134 Bis, 97100 Ragusa, Italy
Cornell University, Ithaca, NY
Second Step – characterize cheese composition and aging characteristics.

Composition of Ragusano Cheese During Aging

G. Licitra, P. Campo, M. Manenti, G. Portelli, S. Scuderi, S. Carpino, and D. M. Barbano


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- The Facility
Formation of CoRFiLаК

• The Facility and Staff
Formation of CoRFiLaC

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• The Facility

• Training CoRFiLaC Personnel at Cornell
  – Stefania Carpino, Patrizia Campo, Anna Renda, Massimo Pavone, Guglielmo Portelli, Caterina Melilli
Formation of CoRFiLaC

- The Facility
- Training CoRFiLaC Personnel at Cornell
- A Second PhD program – Stefania Carpino
Application of Chemometrics to Sensory, Analytical and Gas Chromatography Olfactometry Data of Ragusano Cheese from Milk Pasture and TMR Fed Cattle

S.Carpino\textsuperscript{1,2}, T.E.Acree\textsuperscript{1}, D.M.Barbano\textsuperscript{1}, G.Licitra\textsuperscript{2}, and K.Siebert\textsuperscript{1}.

\textsuperscript{1} Cornell University, Ithaca, NY

\textsuperscript{2} Consorzio Ricerca Filiera Lattiero-Casearia, Ragusa, Italy
24 HOLSTEIN COWS
balanced for stage of lactation

12 FED PASTURE

PASTURE MILK

12 FED TMR

TMR MILK

COLLECTED 4 TIMES

CHEESE MANUFACTURED and AGED FOR 4 MONTHS
Chemical analysis

Quantitative Descriptive Analysis (QDA)

Gas Chromatography Olfactometry (GC-O)
Formation of CoRFiLaC

• The Facility
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• A second PhD program – Stefania Carpino
• Communication and Interaction with the World – Cheese Art
Communication and Interaction
Cheese Art 2002 - Agrigento
Many speakers from all over the world
My presentation title in 2002 that was requested by Giuseppe Licitra

The safety of cheeses made from raw milk: Factors that influence the growth of pathogenic bacteria
Cheese Art 2002
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• Studies on the salting and how to reduce the frequency of gas production in Ragusano cheese.
Early gas development in Ragusano Cheese

Slow penetration of salt during brining may promote development of early gas.
Influence of the Temperature of Salt Brine on Salt Uptake by Ragusano Cheese


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J. Dairy Sci. 86:2799–2812
Lipolysis and Proteolysis in Ragusano Cheese During Brine Salting at Different Temperatures


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J. Dairy Sci. 87:2359–2374

Influence of Presalting and Brine Concentration on Salt Uptake by Ragusano Cheese

C. Melilli, D. M. Barbano, G. Licitra, G. Tumino, G. Farina, and S. Carpino

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J. Dairy Sci. 86:1083–1100
Measurement of Gas Holes and Mechanical Openness in Cheese by Image Analysis


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J. Dairy Sci. 87:739–748
Influence of Brine Concentration, Brine Temperature, and Presalting on Early Gas Defects in Raw Milk Pasta Filata Cheese

C. Melilli, D. M. Barbano, M. Caccamo, M. A. Calvo, G. Schembari, and G. Licitra

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J. Dairy Sci. 87:3648–3657

Composition, Microstructure, and Surface Barrier Layer Development During Brine Salting*

C. Melilli, D. Carco, D. M. Barbano, G. Tumino, S. Carpino, and G. Licitra

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J. Dairy Sci. 88:2329–2340
Interaction of Brine Concentration, Brine Temperature, and Presalting on Salt Penetration in Ragusano Cheese

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J. Dairy Sci. 89:1420–1438
Consorzio Ricerca Filiera Lattiero-Casearia
2002