



Wisconsin Center for Dairy Research

Pizza Update: New Cheese Technologies and Innovations

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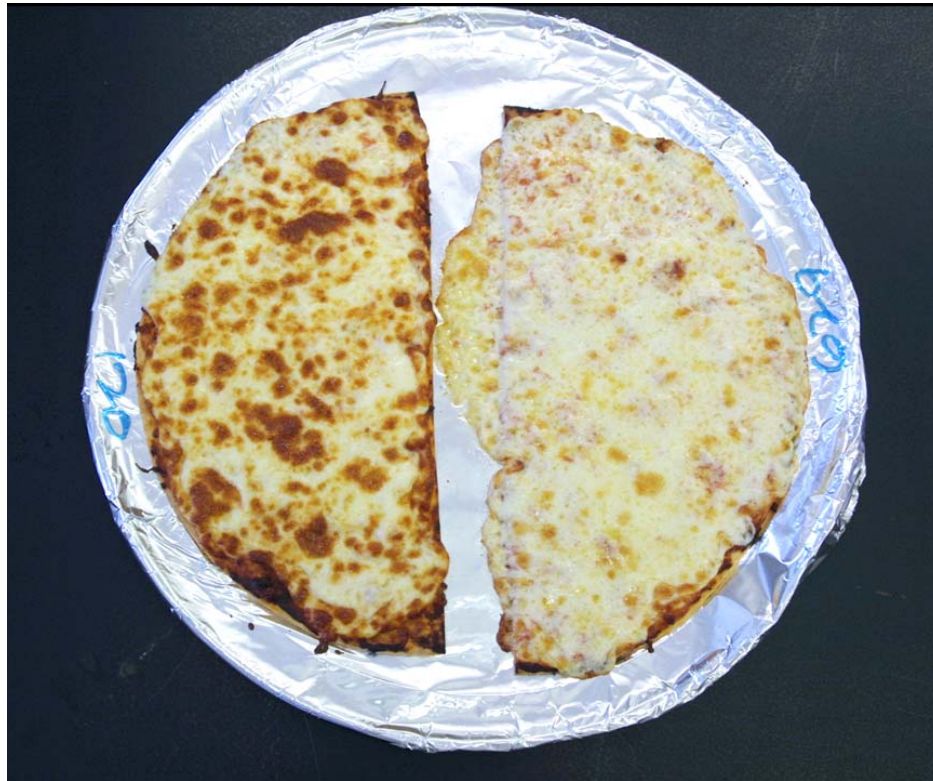
Cheese Innovations

- Control of Browning
- Stuffed Crust Cheese
- Cheese Variety Blending





Browning





Trend



Pizza companies looking for
mozzarella that browns less



Many Mozzarellas are Over browning. WHY?





Manufacturing Issues Leading to Excess Browning

- Fortification leads to excess lactose levels in cheesemilk
- Faster make times result in less time for sugar metabolism
- All coccus (*Streptococcus thermophilus*) starter incompletely metabolizes lactose, builds up galactose





Sugar Metabolism

Key to control of browning





Lactose → glucose & galactose

Galactose a potent browning enhancer







Cheese for Pizza Issues

- Need for speed, time ↓, temp ↑
- Oven type
- Lack of protectors











Strategies for Control of Browning

- Start with less lactose
- Metabolize lactose/galactose completely
- Wash out excess lactose/galactose





Start with less galactose

- Minimize fortification with NDM, condensed skim
- Utilize UF milk
- Consider diafiltration





Metabolize lactose/galactose completely

- Culture selection (mesos, rods)
- Increase make time
- Control presalting





Wash out excess lactose/galactose

- Whey dilution
- Curd rinse (finishing vat or matted curd)
- Curd soak





Final strategy is facility-
and
make-procedure-specific





Stuffed Crust Cheese





Desirable Attributes

- Visual – want to see cheese-filled crust
- Flavor – deliver desirable flavor
- Mouthfeel – want appropriate chew





Overmelt





Solution.....




Creation of custom melt-controlled
process cheese







Benefits

- 
- Tailor-make melt/texture of cheese for stuffed crust
 - Custom-flavored (i.e., pepperoni) to deliver greater flavor impact
 - Utilization of trim





Cheese Variety Blending





To illustrate differentiation...





Traditionally Blended with Mozzarella

Cheddar
Muenster
Provolone





Higher Value Varieties—Blue





Higher Value Varieties—Feta





Higher Value Varieties—Asiago



A Word about Lowfat Cheeses for Pizza





Summary

- Controlled Browning
- Customized Stuffed Crust Cheese
- Higher Value Blends





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Funded by dairy farmers
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Thank you

