

Applications of baking technology for delivering health benefits

Stanley P. Cauvain



Endosperm

Bran layers



Gluten formation

Wheat proteins (glutenin and gliadin)
+ water (hydration) + energy (mixing)
= gluten formation

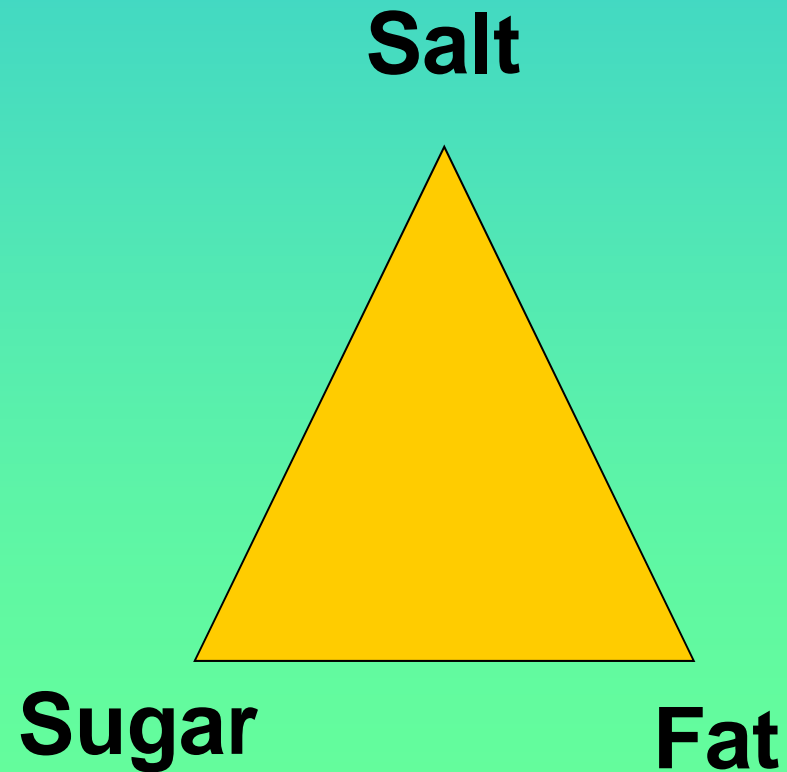




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Ingredients and health: the BIG 3



Roles of salt in baked goods

- **Contributes to flavour – all products**
- **Increases mould-free shelf-life – all products**
- **Gluten formation – doughs**
- **Controls fermentation – bread and crackers**

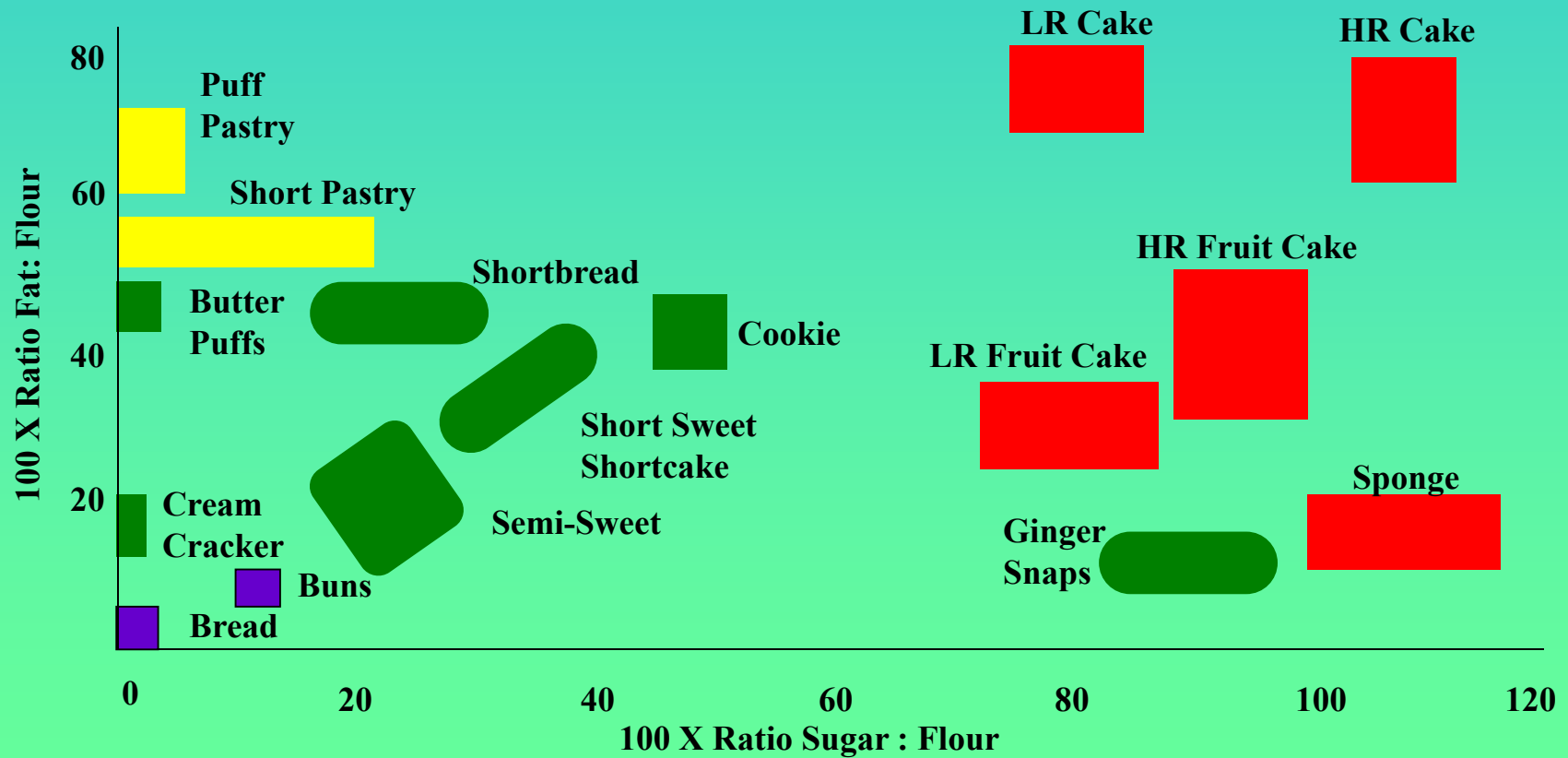
Salt levels in bread

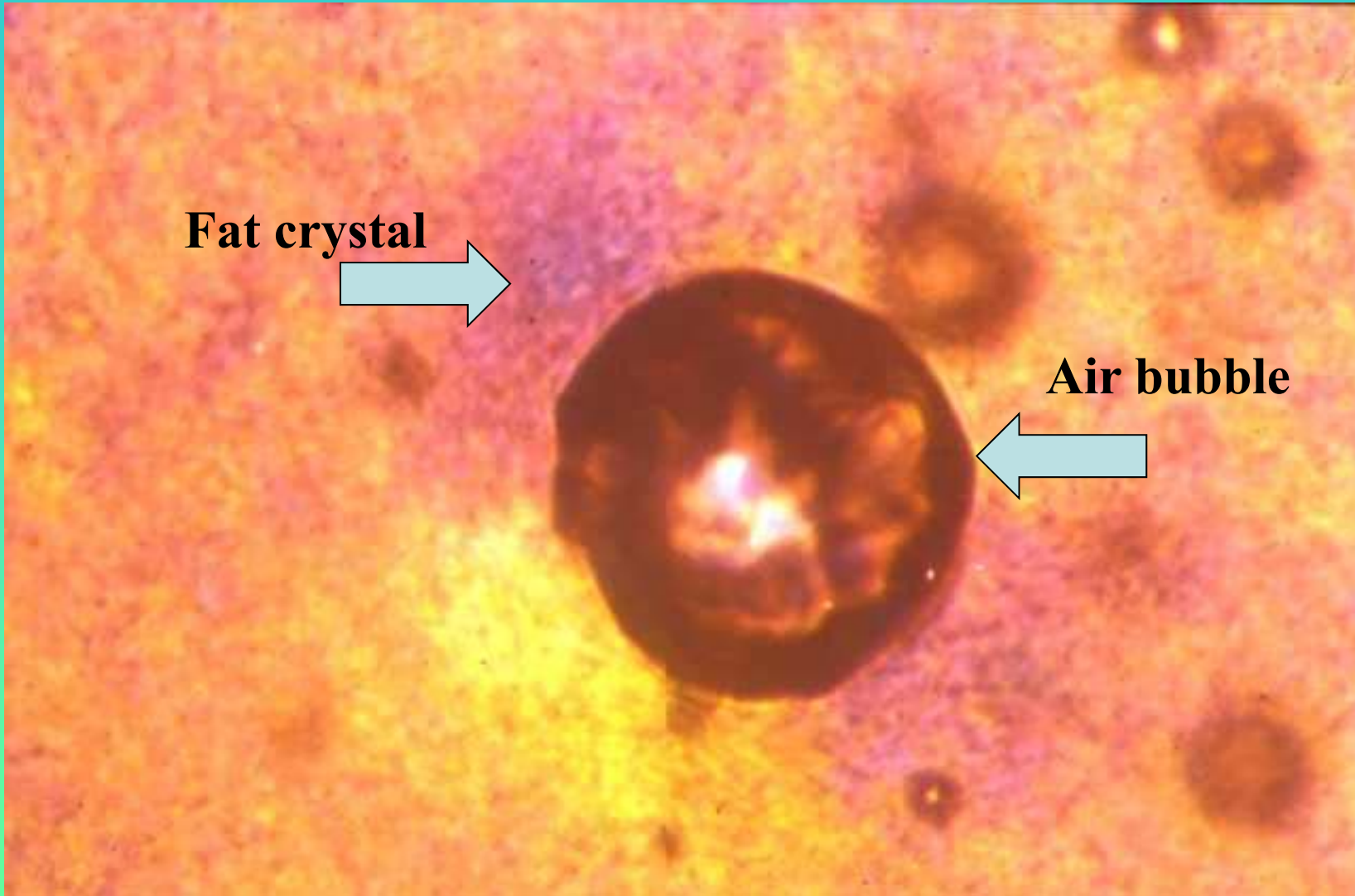
- **35% lower in UK breads than 15 years ago**
- **Industry-wide approach**
- **Gradual reduction to allow consumer taste to adapt**
- **Voluntary 'targets' agreed with UK Food Standards Agency**

Coping with lower salt levels in production

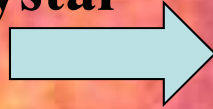
- Increased dough stickiness
- Adjusting yeast level
- Adjusting formulations and processing to reverse any quality losses
e.g. bread volume, crumb structure

Bakery Products Map

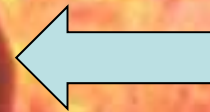




Fat crystal



Air bubble



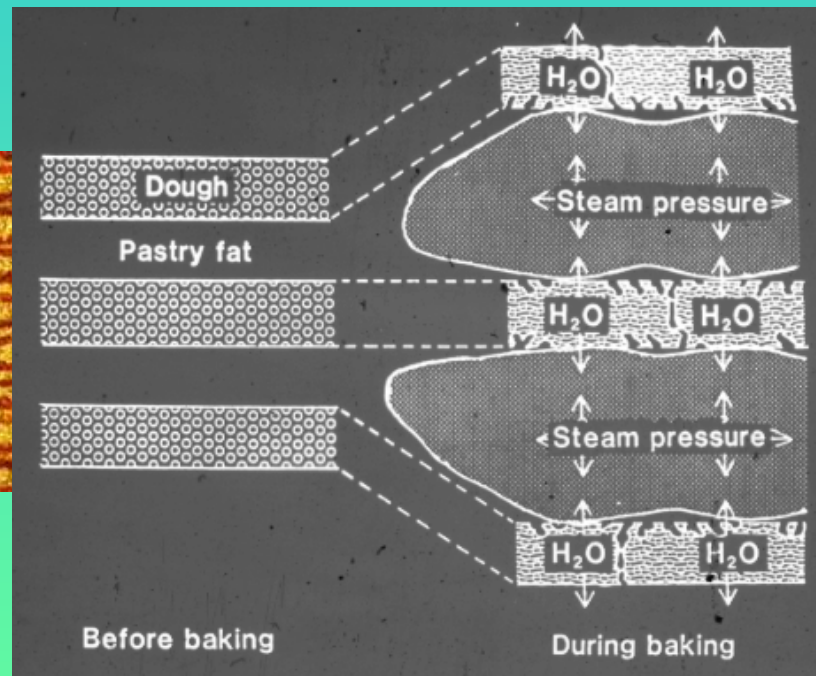
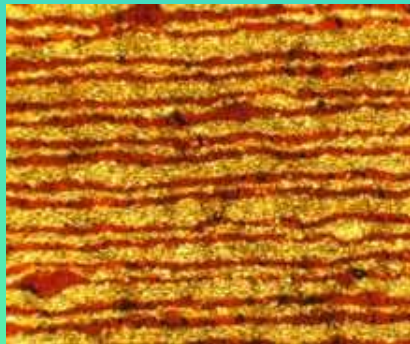
Impact of fat reduction on energy value (100g)

Fat level (g)	Energy value (kJ)
20	1988
13 (-35%)	1775 (-10%)
8 (-60%)	1570 (-21%)

Roles of fat in baked goods

- **Bread**
Dough gas retention, bread volume and crumb softness
- **Cakes**
Batter aeration, soft textures
- **Biscuits**
Short textures
- **Laminated pastries**
Lift and flaky textures

Lift and flakiness in croissant



Butter



Increasing fibre



Conclusions

Four challenges

Conclusions

First challenge

Bakers to adapt products and processes



Conclusions

Second challenge

Create products
with consumer
appeal



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Conclusions

Third challenge



Give clear and consistent nutritional messages

Conclusions

Final challenge



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**Governments
to support
bakers in
producing
healthier
products**

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