

Healthier Bakery

A recipe for reformulation success

Small changes can make a big difference!



Joanne Burns, Reformulation for Health Manager

REFORMULATION FOR HEALTH

With OGGS plant-based egg alternatives

Polly Trollope, Co-Founder & COO,
OGGS





OGGS PLANT-BASED ALTERNATIVES REPLICATE ALL EGG FUNCTIONS



All photos are actual recipes made using OGGS® products

FOAMING **EMULSIFYING** **BINDING/GELLING**



OGGS® AQUAFABA



OGGS® WHOLE EGG ALTERNATIVE

OGGS[®] AQUAFABA

OGGS Aquafaba is the patented plant-based egg alternative with unique chemistry.



Reduce kcal and fat
(85% less kcal than egg, 0 fat)



Extend shelf life by up to 30%



72% less CO₂e than egg



Consistent and stable supply



OGGS[®] Aquafaba vs EGGS

Nutritional & sustainability comparison



50ml OGGS Aquafaba equivalent to 1 egg

1 medium egg = 58g

*Emission variance represents the outcome of changing eggs to OGGS within a recipe on an ingredient basis. It does not include packaging or downstream transportation.

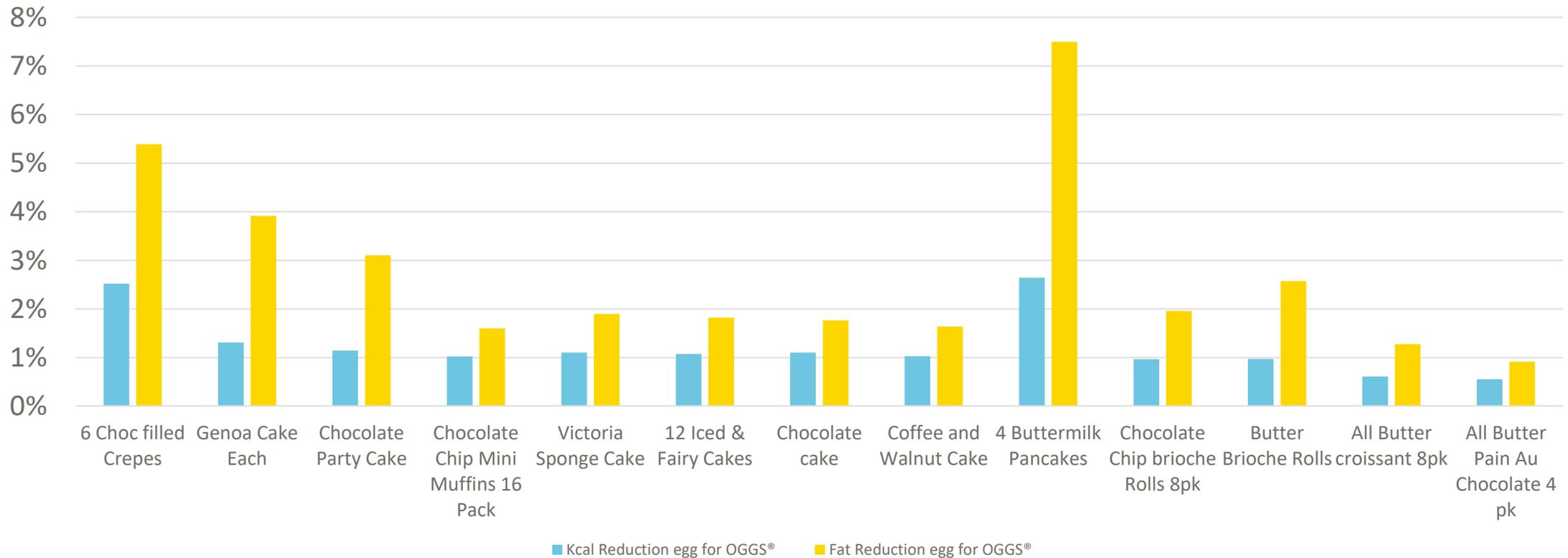
Nutrition per 100ml	Egg	OGGS Aquafaba	Variance Vs Egg
Calories (kcal)	131	18	-86%
Fat (g)	9.0	0.1	-99%
Of Which Saturates	2.5	0.1	-96%
Salt (g)	0.40	0.05	-88%
KG CO ₂ e/Kg*	4.67	0.919	-72%*



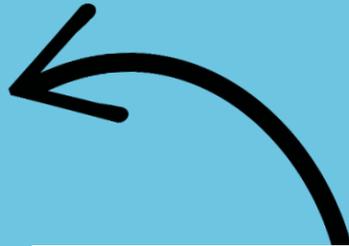
Est. kcal and fat reduction by sku



Kcal and fat reduction, egg for OGGS® Aquafaba



REPLACING 500t of egg WOULD SAVE...

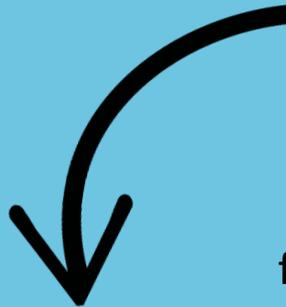


356M

GRAMS OF FAT
and 147m grams of sat fat
or **39m Mars Bars!**

13.7M

KG of Co2e
that's **116,000 flights**
from Edinburgh to Madrid!



Eggs are a greater contributor to greenhouse gas emissions than dairy milk



Eggs are a significant contributor to GHG emissions, due to the animal feed for chickens

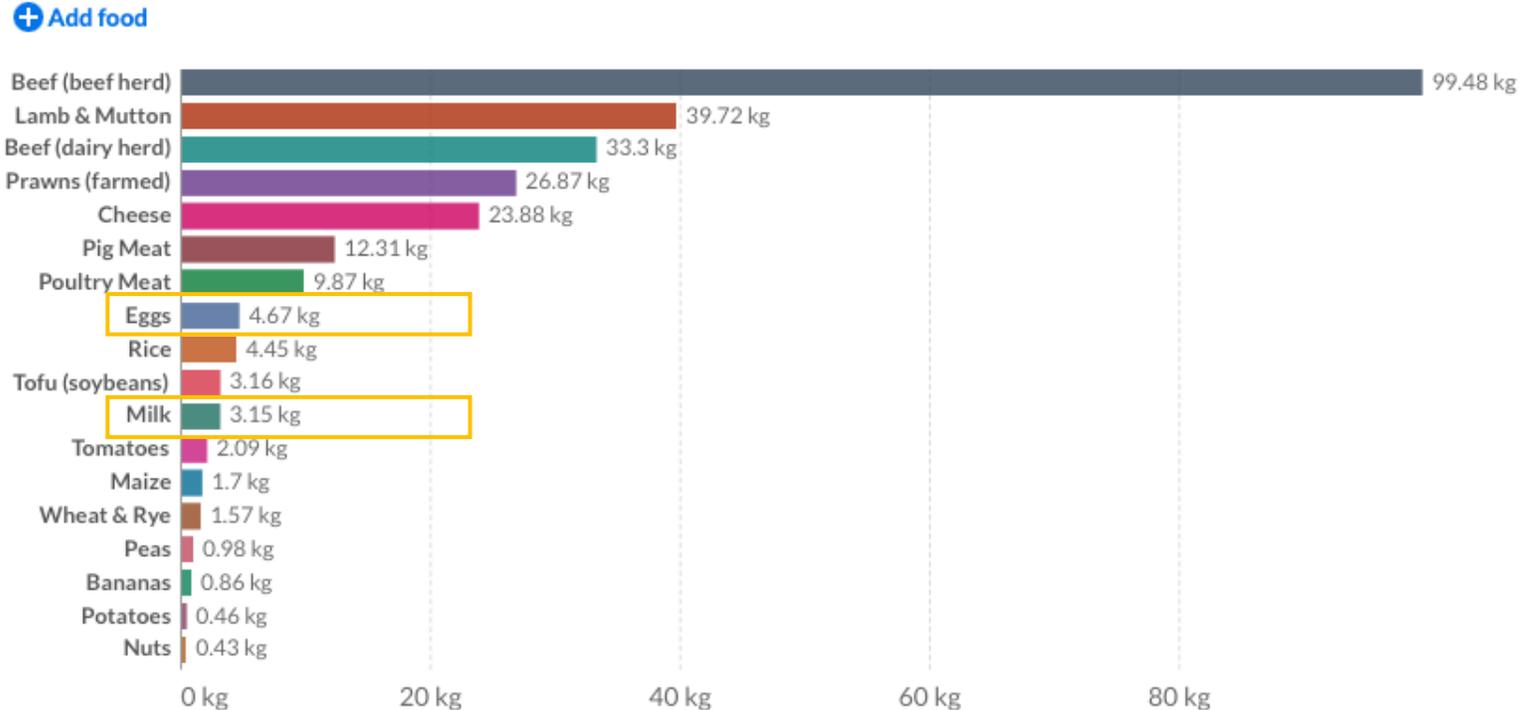


Swapping eggs for OGGs® reduces CO2e by 72%, and has a product impact in line with maize



Greenhouse gas emissions per kilogram of food product

Emissions are measured in carbon dioxide equivalents (CO2eq). This means non-CO2 gases are weighted by the amount of warming they cause over a 100-year timescale.

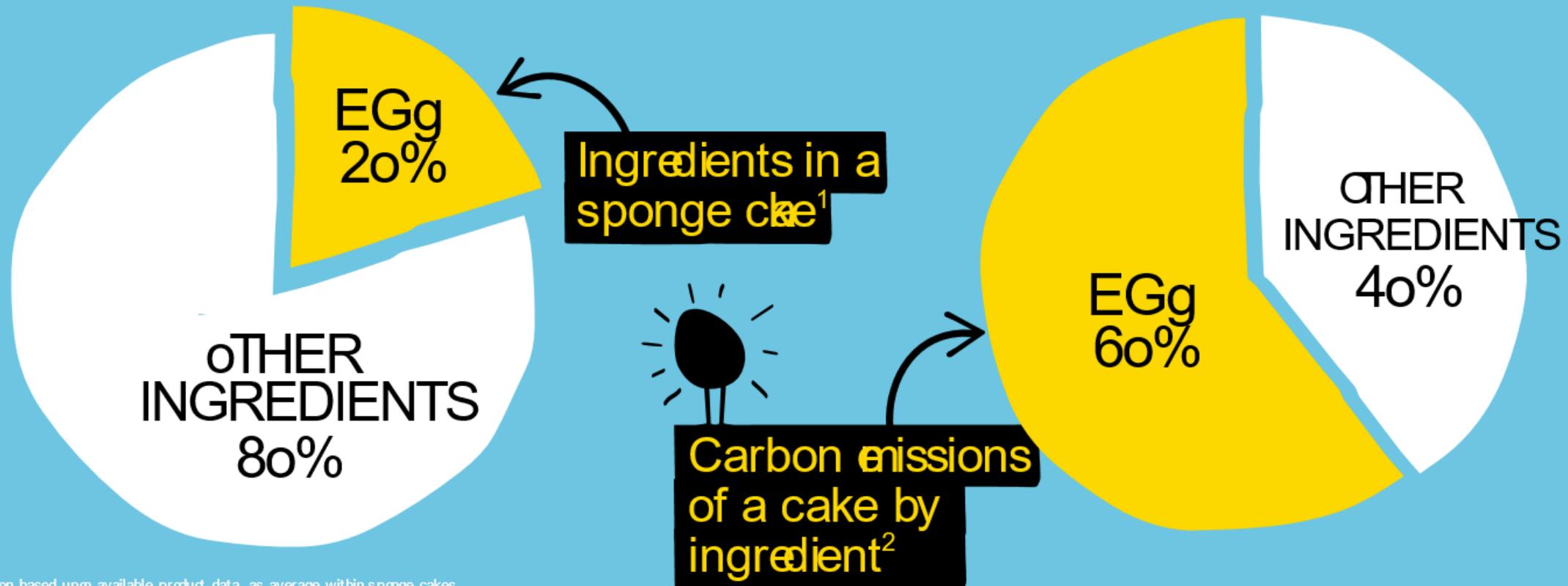


Source: Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers. Note: Greenhouse gases are weighted by their global warming potential value (GWP100). GWP100 measures the relative warming impact of one molecule of a greenhouse gas, relative to carbon dioxide, over 100 years. OurWorldInData.org/environmental-impacts-of-food • CC BY



Egg represents c.60% of a sponge cake's carbon emissions^{1,2}

Whilst egg only accounts for 20% of the total cake volume, it disproportionately contributes to a cake's carbon footprint^{1,2}



1 Assumption based upon available product data, as average within sponge cakes
2 Zevoro, GAP Report Comparing Alternative Foods to animal based alternative products, 2021

CASE STUDY: CHOCOLATE BROWNIES

In a double-blind trial, 100% egg brownies were tasted alongside brownies with 80% egg, 20% Aquafaba.

Respondents were asked which brownie they preferred



20% less cocoa and chocolate is needed in the Aquafaba brownies



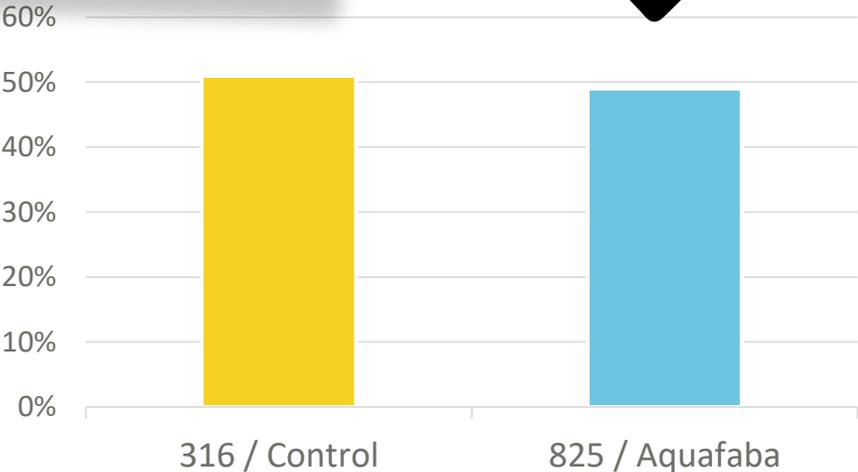
Creating a 6% reduction in overall costs and 11% decrease in CO2e emissions*



Of 83 respondents, even professional food tasters liked both brownies equally*



RESPONDENTS like both brownies equally



CASE STUDY: MINI MUFFINS

20% of the egg within a muffin was swapped for OGGs Aquafaba with no change to manufacturing process or other ingredients

THE IMPACT

Of just one muffin SKU in a UK retailer (24T egg/year)



50% increase in shelf life, from 28 to 42 days



27,120,000 calories removed and 2,136,000 grams of fat removed per year



82,584 kg of CO2e saved (the equivalent of over 700 flights to Madrid!)



Control



20% egg swapped for Aquafaba

OGGS[®] EGG ALTERNATIVE AQUAFABA



200ml x 12



1L x 6



10L x 1



200L x 1

GET IN TOUCH

TRADE@LOVEOGGS.COM

LEARN MORE





S<LTSMITH
LESS SALT, MORE FLAVOUR

Lowering sodium levels with low sodium salt blends

FDF Healthier Bakery webinar

Dzeti Zait – Technical Sales Manager – Peacock Salt Ltd.

16th November 2023

Agenda

- Importance of salts in food
- Importance of salts in bakery products
- Salt reduction strategies for bakery products
- Peacock Salt & Saltsmith
 - > History and background Peacock Salt
 - > Development work
 - > Product development support
 - > Future progress

Importance of salts in food



Food preservation

- Salts reduce water activity, inhibit microbial spoilage
- Unlocks bioactive compounds from herbs & spices which act as antioxidants

Processing ease

- Helps break down complex nutrients in food
- Critical process aid, e.g., in fermentation
- Improves sample handling, e.g., anti-caking



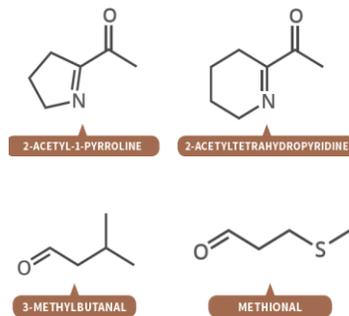
Aroma Chemistry

THE AROMA OF FRESH-BAKED BREAD

WHAT CREATES BREAD'S AROMA?

INGREDIENTS FERMENTATION BAKING

The compounds that help to generate baked bread's aroma are influenced by the ingredients of the bread, and also by compounds generated during the fermentation process. Caramelisation and non-enzymatic Maillard reactions during baking help produce characteristic aroma compounds.



Improve palatability

- Helps release flavour compounds from complex food matrices
- Mineral salts intensify flavour delivery

Importance of salt in bakery products

- Brown colour
- Improves bread elasticity
- Increase the loaf volume
- Increase crumb firmness
- Uniform crumb
- Decrease water activity
- Increase shelf-life
- Good sensory properties in texture & flavour



- Salt important for bakers and consumers alike
- Important factors to consider in reformulation strategy:
 - > Processing ease
 - > Consumer enjoyment
 - > Cost
- Various strategies already exist to help reduce sodium content without compromising product quality

Sodium reduction strategies for bakery products



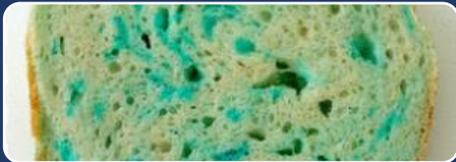
Sodium chloride replacement with other salts

- Partial or complete substitution with K, Mg and Ca salts or low Na sea salt
- Similar or improved process ease with little impact on flavour quality



Gradual reduction of sodium chloride

- Reduce salt levels in products gradually over time
- High risk of consumer unacceptability and extraneous salt addition



Uneven salt distribution in baked products

- Using coarse vs. fine salt grain in products
- May negatively affect yeast activity



Encapsulated salt

- Salt crystal enveloped in hardened vegetable fat of varying thickness
- Can negatively affect dough development



Salt combined with flavour enhancers

- Variety of umami promoting compounds, e.g., spices, yeast extracts, vitamin B₄, fermented sugars
- Success depends on product type and processing method

Peacock Salt and Saltsmith



- Driven by food and drink producers' need to:
 - > Meet consumer demand for healthier food options
 - > Comply with anticipated new UK guidelines affecting over 70 food subcategories
- Off-the-shelf solutions can achieve up to 40% Na reduction
- Bespoke blend development & production support in BRC-accredited blending facilities



- 150-year trading experience, focused on salt importing and associated products since 1990
- Servicing all industries with salt applications
- Food and drink accounts make up to 15% of business, with steady increase YOY
- Well informed of challenges facing industry sectors through close client relationships

Saltsmith & Future progress

- Plans for further improvements to standard salt blends to optimise its applications
- Working collaboratively with subject matter experts, investigating novel materials



Potential umami enhancing compounds extracted from seaweed

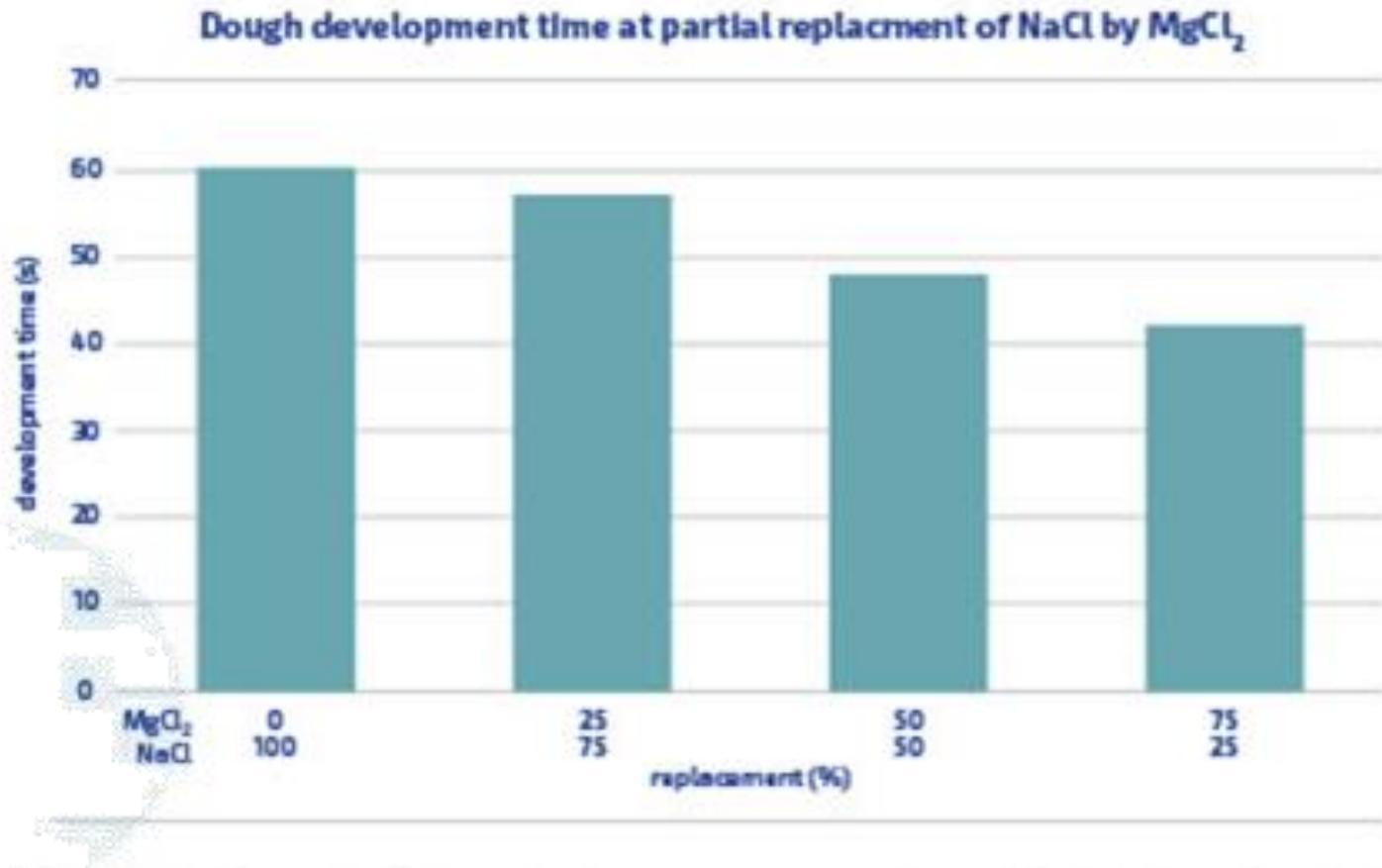


Improvement in saltiness perception using soya sauce process by-product



Address product quality issues in bakery production caused by low sodium salt using $MgCl_2$

Preliminary results: NaCl replacement with MgCl₂



- Collaborative research between supplier partner and commercial bakeries in the Netherlands
- Increased substitution of NaCl with MgCl₂ resulted in shorter dough development time and better gluten development
- New and positive aromas formed



S<LTSMITH

LESS SALT, MORE FLAVOUR

Thank you very much for your attention!

Any questions?

Dzeti Zait – Technical Sales Manager

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SCOTLAND
THE **BREAD**
Home-grown bread for a healthy future

Andrew Whitley

- 1976 founded The Village Bakery Melmerby (Cumbria)
- 1990 supplied first organic sourdough bread to Waitrose
- 1998 winner of the Organic Trophy
- 2003 founded Bread Matters Ltd
- 2006 published Bread Matters – why & how to make your own
- 2008 co-founded The Real Bread Campaign (with Sustain)
- 2016 co-founded Bread for Good Community Benefit Society (Scotland The Bread)
- 2021 BBC Food & Farming Award for innovation (Flour to the People project)

andrew.whitley@scotlandthebread.org

“We aim to help reduce levels of overweight and obesity in Scotland and the burden of diet related disease that inhibits the nation’s wellbeing and prosperity...highlighting the need for us to act urgently to improve Scotland’s diet.” – *Food Standards Scotland* [<https://www.foodstandards.gov.scot/about-us/our-strategy>]

What do we do?	Relevance to today
<p>Research, growing & milling of wheat & rye to increase nutrient density Organic agroecological production methods</p>	<p>Healthy food high natural fibre, long fermentation, digestibility, bioavailability zero additives or pesticide residues</p>
<p>‘Number Nourished per kilo/acre’ metric <i>(with Prof Lindsay Jaacks, GAAFS)</i> Reduce damage of chemical farming; reward short supply chains of nutrient-dense human food (not alcohol); balanced basis for public health intervention (tax polluters/subsidise healthy production & processing)</p> 	<p>Reduce health inequalities / Reduce obesity Local farm production of healthy food; direct community support break dependency on ultra-processed food among low income groups</p>
<p>Community action & solidarity Soil to Slice – community grain growing, learning & sharing: 20+ projects in Scotland</p> <p>Flour to the People – sharing skills to make nutritious bread with local organic wholemeal flour; Solidarity Flour supply to kick-start fair pricing and accessibility [BBC Food & Farming Forward 2017]</p> 	<p>Physical activity/reduce inequalities/the whole works Growing, cutting, threshing, milling, baking and sharing: increase community cohesion, awareness of food & health; regaining control of our daily bread</p> <p>“Fewer slices of more nutritious bread will relieve pressure on your budget, your belt and our biosphere”</p>
<p>The People’s Bread – training community bakers to show how the</p>	

supply to kick-start fair pricing and accessibility [BBC Food & Farming Forward 2017]

For a grain and bread supply that’s healthy, fair, locally-controlled & enduring

THE SIZE OF THE PROBLEM



889,000 tonnes
wheat production
in Scotland in 2017
(enough to make all
Scotland's bread six
times over)



<150,000 tonnes
wheat needed to
make all Scotland's
bread



~200 tonnes
amount of Scottish
wheat currently used
for bread

**The vast majority is used to make animal feed and
cheap alcohol (among other non-food uses)**



2 inches
the average increase
in Scottish men's
waistlines in the last
decade



2 out of 3
Scots are
overweight
or obese

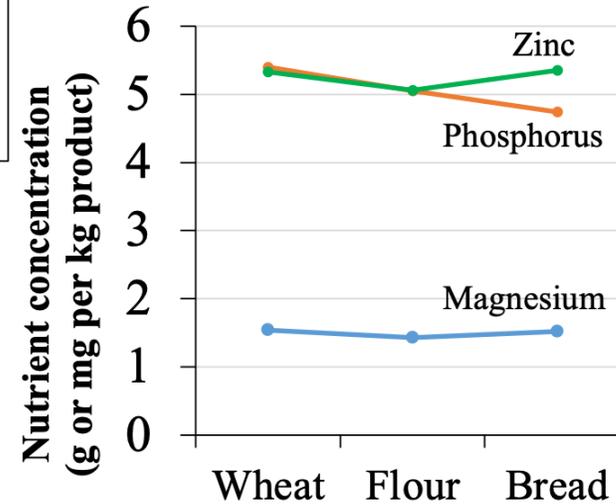
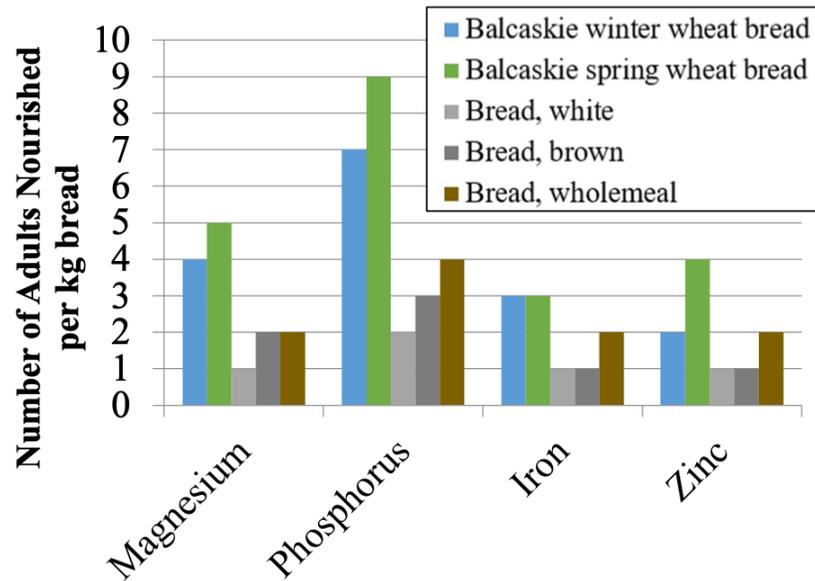


£3 billion
the projected
cost of obesity to
Scotland in 2030



~30% contribution of food
& agriculture to Scotland's
greenhouse gas emissions

RISE Results



Balcaskie wheat bread enables **twice as many adults** to achieve their requirements for magnesium, phosphorus and zinc compared to standard wholemeal bread

Minimal nutrient waste in Scotland The Bread's wheat-flour-bread supply chain

'Reformul8' – our approach to reformulation

Aim

Helping bakers and citizens to move away from 'ultra-processing'

The detail

Fibre and Fermentation

Rebuilding trust

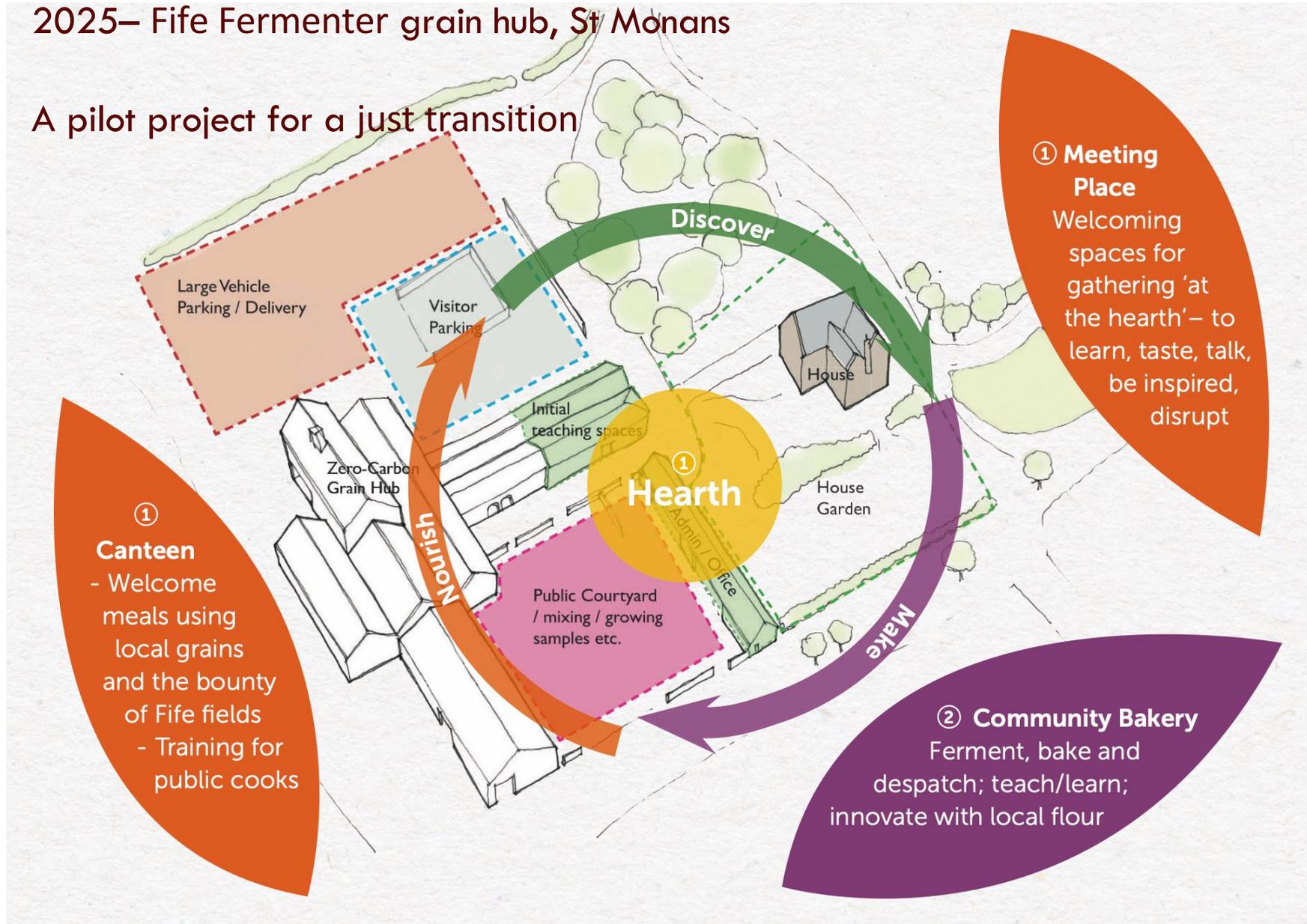
Less and better

The People's Bread – a new basic standard

- verifiably healthier (testing by Rowett Institute)
- high-fibre ($\geq 75\%$ wholemeal)
- well-fermented (lactic acid bacteria)
- made without additives or processing aids
- from local organic wheat
- accessible to everyone

2025– Fife Fermenter grain hub, St Monans

A pilot project for a just transition



① **Meeting Place**
Welcoming spaces for gathering 'at the hearth' – to learn, taste, talk, be inspired, disrupt

① **Canteen**
- Welcome meals using local grains and the bounty of Fife fields
- Training for public cooks

② **Community Bakery**
Ferment, bake and despatch; teach/learn; innovate with local flour



Join

www.scotlandthebread.org (Member or Supporter)

www.realbreadcampaign.org

Save the dates!

Scottish Bread Championship (judging 23 Feb 2024)

THE SCOTTISH REAL BREAD FESTIVAL – 24 Feb 2024

Bowhouse, St Monans, Fife

Takeaways from today

76% of Scottish adults indicated that their **perception of a company would stay the same or improve**, if it reformulated its products

73% felt that they would continue to buy the same amount or more from a company that **reformulated products to improve its healthiness**

Scottish adults want to be healthy!
89% of us have a health goal

82% of Scottish people would want to know if a product has been reformulated

Questions

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www.fdfscotland.org.uk



Joanne Burns, Reformulation for Health Manager