

Priorities for Wheat Quality

WGIN Stakeholders Debate

30 November 2016

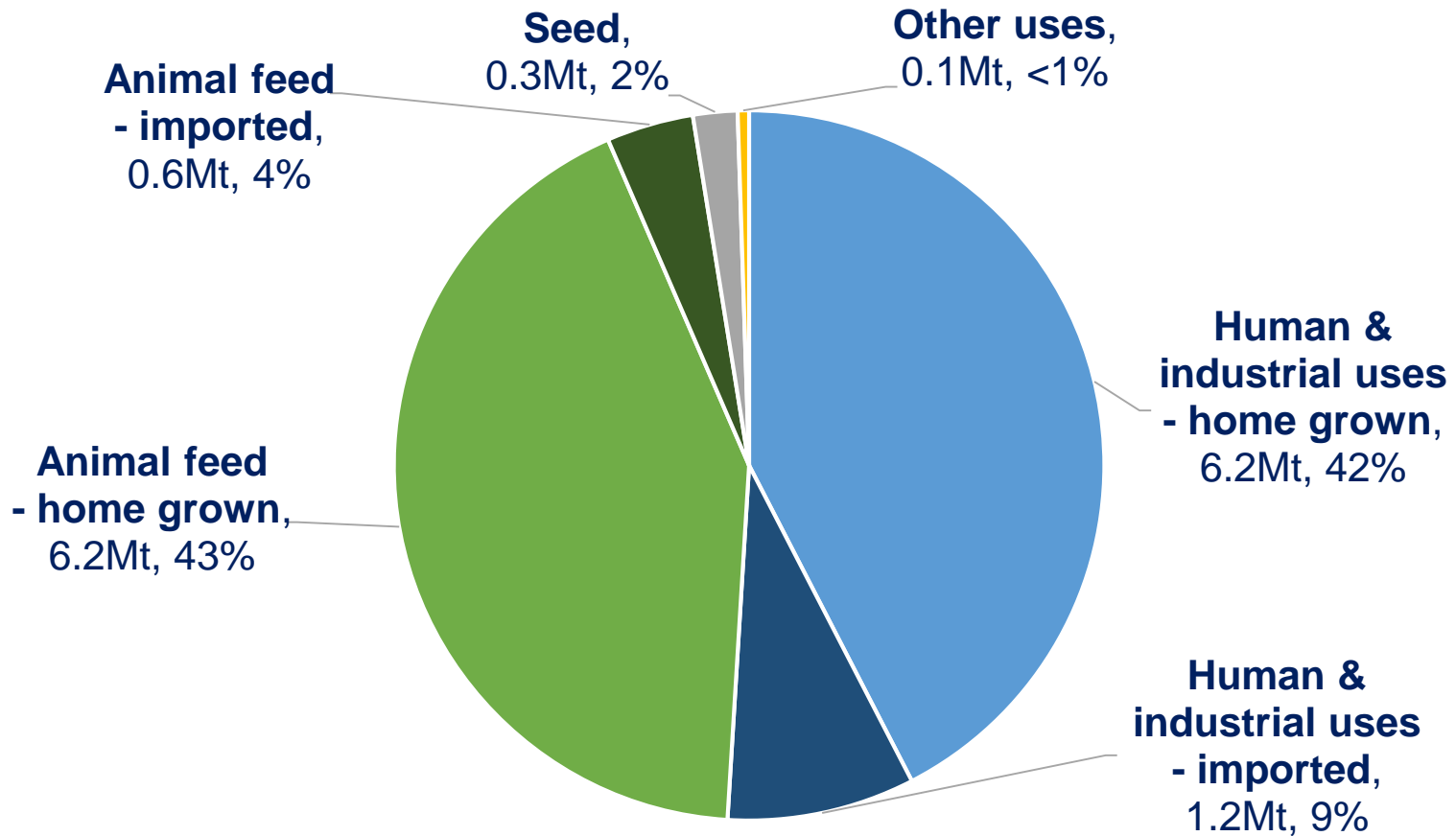


ROTHAMSTED
RESEARCH



BBSRC
bioscience for the future

How wheat is used within the UK* (2011/12 to 2015/16 average)

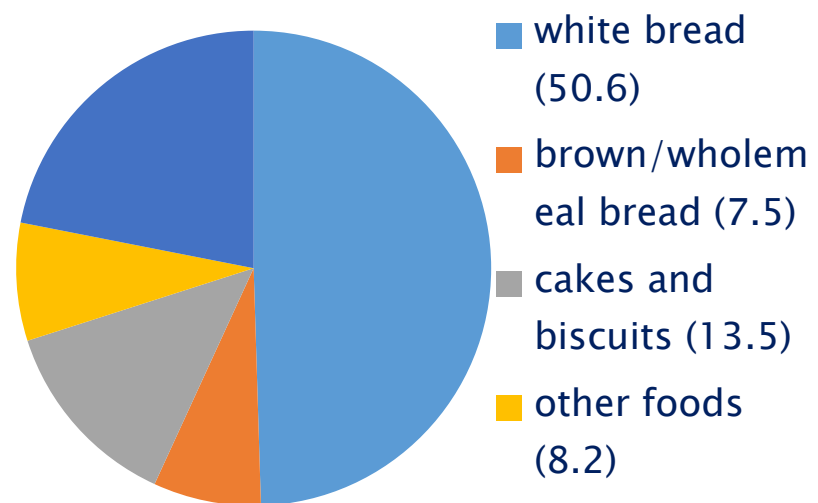


* includes both home-grown & imported wheat. Slide provided by Helen Plant (AHDB) Source: Defra

Wheat milling in the UK (% usage of flour milled)



Total wheat production:
15 million tonnes/pa

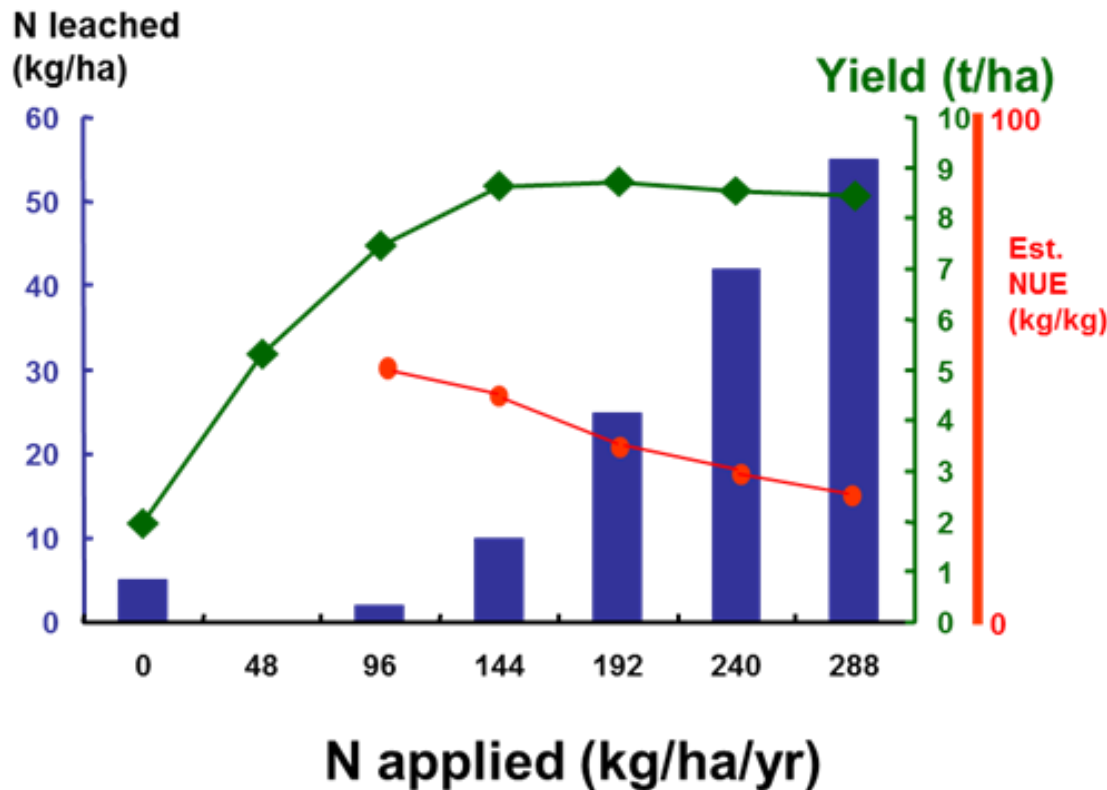


Total flour production:
5 million tonnes/pa

Challenges for Improving Wheat Quality in the UK

- Reduce N requirement for growing high yielding bread making wheats
- Increase stability of yield and quality
- Improve health benefits: increase dietary fibre amount and composition

High levels of N are required to produce wheat for breadmaking



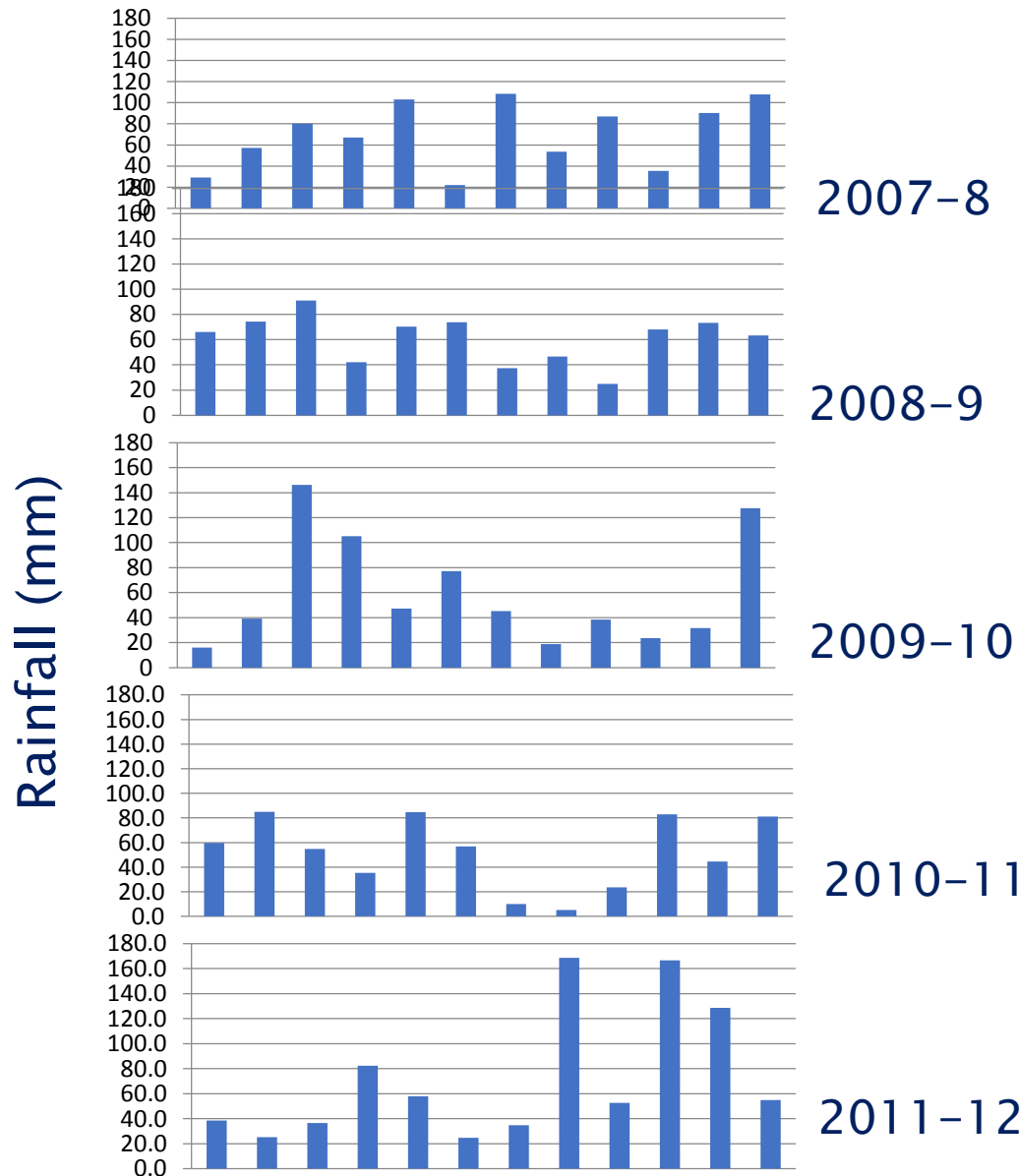
Adapted from Keith Goulding RRes

20 tonnes of wheat at 13% protein

contains 450kgN/Ha

N harvest index
= 80-90%

N requirement
= 600-700kg/Ha



Irregular rainfall pattern is the major effect of climate change in the UK

total monthly precipitation at Rothamsted

August to September years

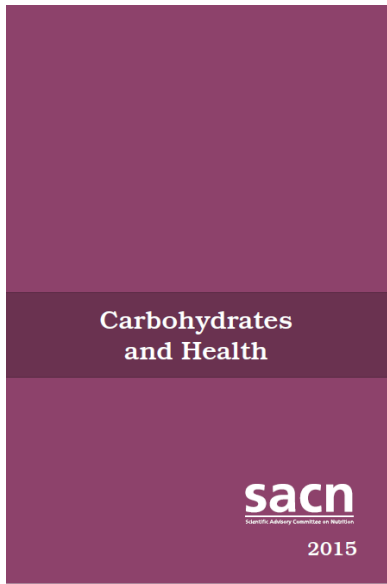
GLOBAL REPORT ON DIABETES



- Diabetes caused 1.5 million deaths in 2012.
- Higher blood glucose was responsible for an additional 2.2 million deaths
- Many of these deaths (43%) occur under the age of 70
- 422 million people had diabetes in 2014 (8.5% of adults)
- The prevalence has increased for the past 30 years and is growing most rapidly in low- and middle-income countries
- Associated risk factors such as being overweight or obese are increasing.
- Diabetes is an important cause of blindness, kidney failure, lower limb amputation and other conditions.

Benefits of Fibre

Conclusions of the UK Scientific Advisory Committee on Nutrition on Carbohydrates and Health



Cardio-metabolic health	
CVD	TDF, insoluble fibre, soluble fibre, total cereals, wholegrains
coronary events	TDF, insoluble fibre, cereal fibre, high fibre breakfast cereals
stroke	TDF, wholegrains
hypertension	wholegrains
blood pressure	Oat bran/oat or barley β-glucans
blood lipids and cholesterol	Oat bran/oat or barley β-glucans
Type 2 diabetes	TDF, insoluble fibre, soluble fibre, cereal fibre, high fibre breakfast cereals, whole grain bread, wholegrains
Colo-rectal health	
faecal weight	TDF, wheat fibre, non-wheat cereal fibre
intestinal transit time	TDF, wheat fibre, non-wheat cereal fibre
constipation	cereal fibre
colo-rectal cancer	TDF, cereal fibre
colon cancer	TDF, cereal fibre, wholegrains
rectal cancer	TDF, wholegrains

Questions for Debate

1. What are the likely requirements for quality in the future and the major challenges to breeders, agronomists and processors?
2. Have there been any recent changes in the quality of UK Group 1 wheats?
How do they compare with imported wheats?
Is there any real difference between soft Group 3 and Group 4 wheats?
4. It is likely that wheat hybrids will become important over the next decade.
Are there implications for end users?
What are the questions for research?
5. How can we deliver health benefits to consumers in affordable attractive products?
6. Are there limitations to using single varieties or differences between requirements for pan bread and other bread products?