

Implications of a Nutrition Driven Food Policy for the Countryside

A Rural Economy and Land Use Programme research project to investigate the effectiveness of policies designed to promote healthy eating, the potential for modified agricultural husbandry methods to produce healthier food products, and the implications for the countryside.



Policy and Practice Notes

The Rural Economy and Land Use Programme is a UK-wide research programme carrying out interdisciplinary research on the multiple challenges facing rural areas. It is funded by the Economic and Social Research Council, the Biotechnology and Biological Sciences Research Council and the Natural Environment Research Council, with additional funding from the Scottish Government and the Department for Environment, Food and Rural Affairs.

Unhealthy eating in the UK costs up to £1 billion a year in healthcare and more in lost productivity through working days lost to ill-health, early retirement and premature death linked to diet-induced heart disease, diabetes and cancer. If successful, policies to promote healthy eating will create shifts in people's consumption patterns that may lead to significant changes in agricultural regimes and land use patterns, which in turn may have a widespread effect on landscapes, farmland biodiversity and rural employment.

What's wrong with our diet?

UK and international guidelines for a healthy diet include recommendations to maintain energy balance, keep saturated fat consumption below 10% or 11% of total energy consumed, and to eat at least five 80 gram portions of fruit and vegetables per day. In reality we are some way from this target:

- A quarter of adults are obese, having a body mass index (weight in kilos divided by height in metres squared) over 30, and another third are overweight, with a body mass index of between 25 and 30.
- For the general population, overall consumption of saturated fatty acids represents 14% of calorie intake and fruit and vegetable consumption needs to rise by a fifth to reach the minimum recommended level.

What is a healthy diet?

Many different diets are compatible with nutritional guidelines. One such 'healthy' diet was calculated by assuming people would make the smallest possible change from their present eating habits. Using Expenditure and Food Survey data it was determined that:

- The main dietary adjustment would be a reduction in consumption of meat and dairy products that are high in saturated fats.
- There would be increases in cereal, fruit and vegetable consumption.



What would be the implications for the countryside if everyone ate this healthier diet?

Scenarios of the impact of healthier eating used a land use allocation model and input-output models. The research assumed import and export shares of agricultural products remain constant.

- With loss of demand for red meat in all scenarios, regions more dependent on beef and sheep production are hardest hit. These more remote regions are not well suited to production of arable crops, so do not benefit from growth in demand for cereals and fruit and vegetables. Structural change in these areas would be extreme, with declines in the number of farms and average farm sizes increasing.
- Loss of farm labour would have significant detrimental effects on the rural economy and migration pressure to more prosperous regions would increase.
- The effects of these changes would also be felt in upstream industries, particularly feed suppliers.
- In the east and south-east of England, intensive horticulture would expand, together with the use of poly-tunnels and irrigation. In those areas able to take advantage of the new arable and horticultural opportunities, farming income would increase, but significant increases in farm employment would not occur, due to dependency on casual labour and the scope for the use of machinery for these operations.

- Areas dependent on livestock production would decline, creating unemployment, movements of population, and fewer, but larger, farms.
- Intensive horticulture in east and south-east England would increase, with more poly-tunnels and water consumption, but no growth in employment

What can be done to encourage consumers to eat more healthily?

To have everyone eating a healthy diet may be a long-term aspiration of governments, but small improvements are a more immediate target. A range of policy tools have been tried, none, thus far, with much success. The project studied two such tools: fiscal measures (taxes on foods high in saturated fats combined with subsidies on fruit and vegetables); and the promotion of healthy eating by advertising (through social marketing).

- The fiscal option was shown to be effective at producing moderate improvements, but remains politically sensitive.
- Social marketing is politically acceptable but often ineffective because advertising messages are not tailored to specific segments of consumers. To be effective, such messages need to be differentiated by demographic characteristics of the intended audience: age, gender, socio-economic status etc. For example:
 - A message focussing on the benefits of healthy eating is most likely to succeed with older couples if aimed at the female partner.
 - To reach younger age groups, messages would be most likely to succeed if they focus on the benefits of a good diet for personal appearance rather than on health benefits.
 - Messages showing that lack of time need not be a barrier to healthy eating could be effective for under-50s from lower socio-economic classes.
 - People who say they are well informed about healthy eating generally have a better diet. The under-50s in lower socio-economic groups report lower knowledge than other groups and have the unhealthiest diet, so enhanced nutritional education for this group could be effective.

- Tax changes can produce moderate improvements but tend to be unpopular.
- Social marketing, which has not achieved a significant impact up to now, could be made more effective with better targeting for specific groups.

Would enhanced foods help?

People find making major changes in their diets problematic. Hence, there has been a search for so-called 'super-foods' that may give equivalent health outcomes by delivering higher concentrations of beneficial components.

But this research suggests most consumers do not like taking these in the form of food supplements and are wary of 'technological manipulation' of food. They are more welcoming of benefits attributable to simple changes in husbandry or choice of plant variety and livestock breed. Yet the commercialisation of agriculture in recent decades has seen production methods and varieties/breeds selected for reasons of productivity, uniformity of appearance, shelf-life etc, rather than health benefits.

The research looked into two case studies to determine whether production methods can make a difference to food composition and whether consumers would be willing to pay more for healthier food.

- Could soft fruit and lettuce be made even better for our health? They are good sources of flavonoids, which have proven health benefits for humans, reducing risk of chronic diseases such as coronary heart disease, stroke, atherosclerosis and cancer. It is thought that plants respond to Ultra Violet (UV) light by accumulating these compounds because they help to protect plant cells from UV damage. However, soft fruit and lettuce production in the UK relies on protected cropping under polythene films which block UV transmittance. The research involved growing the crops under novel UV transparent plastic films and quantifying the effects of the films on flavonoid content and antioxidant capacity of the produce.

Growing crops under the UV transparent film had little impact on the health-qualities of the soft fruit but showed significant improvements for lettuce.

- Does grazing sheep on biodiverse pastures that include broad-leaved plants as well as rye-grass reduce saturated fatty acid in lamb-meat and increase levels of 'good' fatty acids? The research showed that enhancing biodiversity had a positive impact on meat fatty acid profiles, but this could not be explained by the relatively low levels of beneficial fatty acids ingested from the biodiverse plants in the grass. It is possible that individual plant species such as knapweed and selfheal may have indirect effects on fatty acid biohydrogenation in the sheep's stomach, leading to a greater supply of unsaturated fatty acids to the small intestine for incorporation in ruminant tissues. This encouraging finding needs confirmation through further research.
- These enhanced products would have lower yields than conventional produce so the research also looked at whether consumers would be willing to pay a premium for the added health benefits. Focus groups and choice experiments showed that a sufficient number of consumers would be prepared to pay a large enough premium to cover additional production costs.

- Use of novel UV plastic film in poly-tunnels could help to enhance the flavonoid and antioxidant capacity of vegetables.
- Grazing sheep on biodiverse pastures seems to have a beneficial effect on the fatty acid profiles of the lamb produced.
- Focus groups and choice experiments show consumers are prepared to pay the extra production costs.

Further information

The research has been carried out at the University of Reading.

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Useful resources:

Givens, D I, Kliem, K A and Gibbs, R A (2006). The role of meat as a source of n-3 polyunsaturated fatty acids in the human diet. *Meat Science*, 74, 209-218

García-Macías, P, Ordidge, M, Vysini, E, Waroonphan, S, Battey, N H, Gordon, M H, Hadley, P, John, P, Lovegrove, J A, and Wagstaffe, A (2007). Changes in the flavonoid and phenolic acid content and antioxidant activity of red leaf lettuce (cv. Lollo Rosso) due to cultivation under plastic films varying in ultraviolet transparency. *Journal of Agricultural and Food Science*, 55, 10168-10172

Chambers, S, Lobb, A E, Butler, L T and Traill, W B (2008). The influence of age and gender on food choice: a focus group exploration, *International Journal of Consumer Studies*, 22, 356-365.

Traill, W B, Arnoult, M H P, Chambers, S A., Deaville E R, Gordon, M H, John, P, Jones, P J, Kliem, K E, Mortimer, S R, Tiffin, J R (2008). The potential for competitive and healthy food chains of benefit to the countryside. *Trends in Food Science and Technology*, 19, 248-254.

Project website:

www.relu.rdg.ac.uk/

Food Standards Agency websites:

www.food.gov.uk/

www.foodbase.org.uk/

