

FOOD a growing problem

by Edmund Davey

Part One

Sir John Beddington, the government's chief scientific adviser, announced in October 09 his support for the use of GM crops to boost food production, this coinciding with an announcement by the Royal Society advocating the same approach. He pointed out that GM is not 'the silver bullet' but should be used as part of a range of solutions to meet the estimated 50% increase in demand for food expected by 2030. Meanwhile, Jacques Diouf, head of the FAO, has said that the global economic crisis contributed to pushing the number of hungry people in the world above 1 billion for the first time, which means presumably that without the meltdown we would have had to wait another couple of years for the event. In July 09 a Telegraph headline announced that the "Era of cheap food is ending, say MP's", and the June edition of National Geographic produced a special report 'Feeding The World'.

A salient point is that each of these items clearly links food scarcity to rising population. The environment, food and rural affairs select committee mentioned in the Telegraph report concedes that population growth is a reason for concern, pointing out that "...it is therefore important that attention remains focused on limiting population growth, as much as on increasing food production". Unfortunately, in the same report Hilary Benn was

"... more sceptical. He described the projections as 'a guide to what we are seeking to do,' but added 'I do not think we should get hung up on the precise figures' [for future food requirements]. He commented that the projections made 'certain assumptions' and that '... there are other things that you could do to help deal with the problem', ... he gave the example of reducing post-harvest losses, rather than influencing population growth or diet." (1)

Not much support there, then, from the Secretary of State for Environment, Food and Rural Affairs,

though with four children, his position is compromised. This is a pity, because in an earlier speech to the Fabian Society he had ticked all the boxes on starvation, poverty – even the world population projections (2). Suggestions for tackling the problem are in any case thin on the ground, though the acknowledgement for the need to do – something – from the H of C committee is interesting.

How serious is the world food situation? Will the hoped for return to economic business-as-usual allow agencies to step up aid, so that malnutrition can be at least held from worsening? In a world of increasing numbers I think that this is unlikely for several reasons. The first is the blindingly obvious that there has got to be a limit to food production somewhere. I touched on this in an earlier, general article (3), mentioning species loss, climate change, water depletion, and soil erosion. As numbers rising meet resources falling, Malthus' 'positive checks' come into play, and surely a billion malnourished must be an example of these mechanisms becoming active. A further, temporarily forgotten, impediment to a return to growth must be dwindling fossil fuel resources. Much is made of new oil finds, but, even ignoring the increasing difficulty of exploiting these, expressed as deteriorating energy return on energy invested, the loss of output from aging fields now exceeds new output from developing ones. Richard Heinberg gives numerous examples of this, pointing out that "Global production falls when loss of output from countries in decline exceeds gains in output from those expanding". Fossil Fuels are essential to agriculture; he also points out that "Peak oil means peak food" (4). Perhaps renewables will one day pick up the slack, but that day is far into the future, by which time other resource shortages will have become even more restrictive.

There is one more intriguing factor in the game which is presumed to be food production chasing numbers; it is that this is not the actual game

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at all, but the reverse, ie, numbers chasing food production. First came agriculture, then surpluses, then increasing numbers, then more agriculture etc. This point has been variously made. The UN supports the statement that "... the agricultural transformation improved food security and thereby set in motion a progressive increase of human population density. So productive was the enterprise of agriculture that over time an ever-decreasing number of farm workers were able to feed ever larger numbers of people" (5). Russ Hopfenberg's fascinating PP Presentation makes the same point in great detail (6), whilst the astute Thomas Malthus pointed out that:

The constant effort towards population ... increases the number of people before the means of subsistence are increased ... The poor consequently must live much worse and many of them be reduced to severe distress ... while the price of provisions would at the same time tend to rise. The labourer therefore must work harder to earn the same as he did before. During this time, the discouragements to marriage ... are so great that population is at a stand. In the meantime the cheapness of labour ... encourage(s) cultivators to employ more labour ... to turn up fresh soil ... till ultimately the means of subsistence become in the same proportion to the population as at the period from which we set out. The situation of the labourer being then again tolerably comfortable, the restraints to population are in some degree loosened, and the same retrograde ... movements with respect to happiness are repeated. This sort of oscillation will not be remarked by superficial observers ... yet ... in all old states some such vibration does exist ..." (7)

There are two differences to be emphasised between Malthus' late 18th century and the present day. Firstly there need be no "discouragements to marriage", as contraceptive technology is well advanced; only pronatalism stands in the way of poverty abatement. Secondly, as Malthus pointed out, the abundance of cheap and hungry labour encouraged farmers to put more ground under cultivation, or hungry labour

to emigrate to the New World. Neither more ground nor a New World are any longer available.

With England as the most densely populated country in the European state, UK food security may become a problem earlier than elsewhere in the group. In 1998 DEFRA changed its method of assessing our self-sufficiency, so that the figures lifted from 53% to 68%. By March 09, however, the new methodology could only claim 60%, making a yet cheerier system necessary to maintain public confidence. The next statement is due in March 2010, though, as the UK population continues to rise, any new counting strategy will be hard pushed to buff up the rosy spectacles.

Self-sufficiency is not currently a necessity, but it will become more important as the century continues. This is for two reasons. First, the greatest population growth is expected in the developing world, who will need all the resources they can muster to ease their already hungry situation. Their efforts to feed themselves will be made harder by the 'neocolonial' manoeuvring of other nations to appropriate land for their own uses. The Economist reported in May 09 that Saudi Arabia is "... spending \$100m to raise wheat, barley and rice on land leased to them by the government", and that "The investors are exempt from tax in the first few years and may export the entire crop back home." Of all places, this investment is in Ethiopia, where, the article continues "... the World Food Programme (WFP) is spending almost the same amount as the investors (\$116m) providing 230,000 tonnes of food aid between 2007 and 2011 to the 4.6m Ethiopians it thinks are threatened by hunger and malnutrition." Further examples are given of, eg, The Sudan, where a fifth of its cultivated land is to be set aside for the use of Arab governments. China is an even bigger contestant in terms of land under negotiation (8). The conclusion must therefore be that the UK, no longer a superpower, would be swimming in a much bigger pool with sharks who have sufficient muscle and jaws to devour smaller fry with ease; sharks, I understand, don't blink.

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The second reason why UK self-sufficiency might become necessary evolves from the first. With global markets a minefield, Europe will bear more heavily upon its own resources. As part of Europe, we would expect to supplement our produce with food from our partners, but fertile soils do not always remain reliably so. Flooding can prevent the land from yielding its customary crops for a season; the Danube for instance flexed its muscle in 2006 and flooded 200,000 Rumanian hectares (9). The opposite of 'too wet' is 'too dry', so that the abundance of supermarket vegetables from Spain may dwindle if the drying there continues, with 18% of its surface area already displaying "... a high or very high risk of suffering..." desertification, a decidedly more than seasonal problem (10).

The UK itself will not be immune to extreme events, even whilst striving for more self-sufficiency. Thus The Environment Agency Wales is considering plans to flood prime agricultural land in Montgomeryshire to ease downstream flooding in England. Worse still, permanent abandonment of land to the sea is being mooted in Norfolk and North Yorks (11). So in the historically near future the UK could find itself, not only still in need of substantial amounts of food imports from the rest of Europe, but also in an increasingly competitive market, at the end of a supply chain of 'food miles', with oil becoming dearer, and, unless we can mitigate the process, many extra mouths to feed. Then, with what will we pay for the rising expense? Financial services, tourism, catering? We shall have to educate in skills more relevant to the stringent conditions of the later 21st century than we do at present, and become very good at them, if we are to dine, even upon Europe.

Recognizing the problem, DEFRA has started wooing farmers again. The daunting question now arises: "To grow what?" Assuming a conventional diet, and using Global Footprinting data which include a carbon footprint, to assess our chance of becoming self-sufficient, the current biocapacity data suggest UK land might support perhaps 20 million. Factoring out the carbon footprint – which is huge – and going for broke with whatever energy might come to

hand and the devil take the hindmost, we might bump along with 50 million, as we did in WW2 (12). If sufficient energy were not available, then using land for horses or biomass would reduce that figure.

DEFRA have considered this, and conclude that "A radical and prolonged breakdown in European and international trade or shipping would not undermine the UK's fundamental ability to produce enough nutritious food for the population, albeit with much simpler diets", continuing that "Maximising calorie production would require a dramatic reduction in livestock production with all crop production used for human food where possible instead of animal feed." From this we understand vegetarianism and later veganism (H Benn again!). We are assured that "... the UK could produce more than enough food to feed itself with a much changed diet." (13). As in many government calculations, the numbers underlying the forecasts are not revealed, though I suspect they are based on current rather than projected population sizes. So far as Veganism is concerned, although many embrace it, important questions still hang over its suitability as a long term diet, especially for workers engaged in jobs which will become more manually exacting. Veganism also requires a considerable knowledge and a level of interest to pursue it, if health and strength are to be maintained. A considerable knowledge and a level of interest in what is eaten do not seem to be priorities with most consumers at present.

Finally, it needs saying, that it is a sad comment on our age that we are forced into such pernicky calculations. Whatever it once was, our planet can no longer be claimed to be the abundant supplier of all our needs. The harvest hymns ring hollow, whilst NGOs and government jostle each other to avoid mentioning the 'P' word – except as an inevitable datum. But if governments and people cannot be brought to face the necessity of curtailing numbers now, then when? Perhaps, when we have stripped the Earth bare like locusts and have created a world where hunger is an ubiquitous presence, the fiction of Soylent Green will become reality.

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Reference sources for Part One

- (1) H of C Environment Food and Rural Affairs Committee: Securing Food Supplies up to 2050: The Challenges Faced by the UK; Fourth Report of Session 2008 - 9, pp 10 & 11
- (2) H Benn to Fabian Society, Dec 08
- (3) Jackdaw, Aug 08, The Kraken Wakes
- (4) Sustainability, Population & Resource Depletion; Heinberg PP Presentation; Post Carbon Institute, Oct 2008
- (5) Daniel Hillel & Cynthia Rosenzweig, Biodiversity & Food Production, 'Sustaining Life', OUP
- (6) Dr Russell Hopfenberg / 105 Autumn Drive / Chapel Hill / NC 27516 / USA
- (7) An Essay on the Principle of Population, Rev Thomas Malthus, 1798
- (8) The Economist, 21st May 09, 'Outsourcing's Third Wave'
- (9) The Week, Apr 06
- (10) Spanish Foundation for Science & Technology, Sep 09
- (11) Welsh Daily Post Sep 08; Daily Telegraph Mar 08; BBC News Jul 06
- (12) DEFRA point out that we were much less self sufficient at that period than currently, even though we have a larger population. Much of this improvement has however been due to the use of greater mechanisation and pesticide and fertiliser input – all oil-based processes.
- (13) DEFRA UK Food Security Assessment: Detailed Analysis, Aug 09, pp 60 & 61

Part Two

In the previous Jackdaw, in 'Food, a Growing Problem', I remarked that the (then) government was making reassuring noises regarding Food Security in the UK, via the DEFRA document Food Security Assessment: *Detailed Analysis, August 2009*.

This paper pointed out that '...a radical and prolonged breakdown in European and international trade or shipping would not undermine the UK's fundamental ability to produce enough nutritious food for the population, albeit with much simpler diets', and that this would of course entail '...a dramatic reduction in livestock production, with all crop production used for human food where possible instead of animal feed.'

There have certainly been plenty of studies to show that the overconsumption of meat (especially from confined animals fed on grain-rich diets) can have severe health consequences. An example from history would be the changed personality of Henry VIII, whose '...craving for meat...' along with a '...lack of fruits and vegetables rich in vitamin C' point to scurvy, rather than syphilis, as responsible for the symptoms

which he displayed: '... nobody in the Tudor era associated foods with health. They hoped in vain that the green and golden concoctions of the alchemist would bring a cure.' (1)

Veganism is at the other end of the dietary spectrum. Its practitioners seem often to base their choice of diet on ethical concerns rather than on nutritional needs, and have to study their intake carefully to avoid health risks. In an exhaustive technical study Jack Norris, Director of Vegan Outreach, said "The longer a vegan does not supplement with B12, the lower their active B12 levels will drop. It is unlikely that most (or possibly any) vegans can achieve optimal health for a considerable length of time without supplementing with B12" (2). Supplementing the vegan diet appears to be crucial, as another study found that 'Severe nutritional deficiencies developed in four infants from a new vegan religious community. ... All of the infants had profound protein-caloric malnutrition, severe rickets, osteoporosis, and vitamin B12 and other deficiencies. One infant died, while the three others had an uneventful recovery...' (3)

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Perhaps a good thing then that the politics involved in persuading the UK population to take the path of veganism would be daunting, even impossible. According to the Imaner Consultants' website (specialising in vegan websites), the vegan population of the UK in 2007 stood at 162,000, or just 0.3%. The vegetarian option might be more acceptable, as, according to a Wikipedia article, "...The Food Standards Agency Public Attitudes to Food survey 2009 reported that 3% of respondents were found to be 'completely vegetarian', with an additional 5% 'partly vegetarian' [ie] 'don't eat some types of fish or meat'".

So joining the dots points us towards the middle path of vegetarianism for some, with more 'meat-reducers' and 'flexitarians' (part vegetarians). Enough studies have been done to indicate that a vegetarian tendency could show a general improvement of health for both individuals and society. Such an approach would enable more to be fed in the likelihood of the need for greater self-sufficiency. There could, of course, never be a vegetarian country, only a country where some of the population might be happy with a vegetarian, or more vegetarian, diet, because vegetarians (as opposed to pure vegans) eat dairy products and eggs in various

proportions, and no nation struggling to feed itself could afford to simply pension off redundant animals past their productive prime. The prospect of a sector of society turning through need towards vegetarianism would still provide omnivorous Britons with some meat, albeit from older animals. The availability of meat would in any case fit better with human evolution, according to the observation that: "... evidence, including isotopic analyses of Palaeolithic hominid collagen tissue, reductions in hominid gut size, low activity levels of certain enzymes ... all point toward a long history of meat-based diets in our species' (4).

This note has not, of course, invoked other consequences resulting from overpopulation, though it is relevant to note that a reduction of herds could have a negative effect on soil fertility, and that ploughing up pasture land releases CO₂ into the atmosphere. In view of the profound changes imminent if numbers are allowed to keep rising, it is unfortunate that Home Secretary Theresa May does not believe that there should be an absolute limit on the population, and therefore also relevant to observe that her newly acquired status does not as yet imply newly acquired wisdom. Early days.

Reference sources for Part Two

- (1) Susan Maclean Kybett, writing in the September issue of *History Today*, reported in *The LA Times*, August 1989
- (2) Vitamin B12: Are you Getting IT? Revised May 2002
- (3) *Archives of Paediatrics and Adolescent Medicine*, Vol. 133 No. 2, February 1979: Multiple Nutritional Deficiencies in Infants From a Strict Vegetarian Community; Ehud Zmora, MD; Rafael Gorodischer, MD; Jacob Bar-Ziv, MD
- (4) *European Journal of Clinical Nutrition*, Mar 2002: The paradoxical nature of hunter-gatherer diets: meat-based, yet non-atherogenic; Cordain L, Eaton SB, Miller JB, Mann N, Hill K: Department of Health and Exercise Science, Colorado State University.