

## Vegetarianism

*Contents:* Information, questions and discussion concerning vegetarianism.

*Time:* 2 periods.

*Intended use:* GCSE Biology, Human Biology and Integrated Science. Links with work on nutrition, digestion, food chains and land use.

*Aims:*

- To complement and revise prior work on nutrition, digestion and food chains
- To describe the two main types of vegetarianism, and the reasons people adopt them
- To develop awareness of the advantages and disadvantages of being a vegetarian
- To provide opportunities to practise skills in comprehension and data analysis, and certain communication skills.

*Requirements:* Students' worksheets No. 703

### Notes on some of the questions

*Q.2* Although wool production does not directly involve slaughter, vegans consider it involves exploitation of the animal and often causes suffering. Wool production is also linked to the meat industry: sheep are raised for meat as well as for their fleeces. Much depends on the person's reason for becoming a vegetarian. A compassionate or ethical vegetarian would avoid wool, but a person who is a vegetarian for health reasons may prefer wool because it is a natural fibre.

*Q.3*

(a) (i) Using more agricultural land for plant food production could mean less food imports were needed, provided people were prepared to change their eating habits. If they were not, it would simply cause more imports of meat and dairy products, or a reduction of choice.

(ii) Such a change could in principle benefit other countries, though in practice this might not happen. For example, Brazil exports soya to Britain to make animal feed. With less animals in Britain, this soya might no longer be needed, but it is debatable whether this would benefit Brazil. In principle hungry people might benefit, but in practice the country might suffer because of the loss of foreign exchange earned by soya exports.

It is interesting to look at the figures for cereal use in Britain. In 1984/85, about 29.6 million tonnes of cereals were available in Britain. This includes both home-produced and imported cereals. Of this 29.6 million tonnes:

**11.5 million** went to export and EEC Intervention Store (the 'grain mountain')

**8.3 million** were used for human consumption (bread, cakes, etc.)

**9.8 million** were used for animal feed, of which

**5.2 million** were for poultry

**3.0 million** were for pigs

**1.6 million** were for cattle (mainly for milk production).

If the 9.8 million had not been used for animal feed, they would presumably have gone to Intervention Store, in the absence of a radical swing to vegetarianism.

It is also important to note that nearly half of Britain's grazing land is rough pasture which can *only* be used for grazing, an important example being sheep grazing in upland Britain. If this land were no longer used for sheep raising, it would become completely unproductive in agricultural terms. For this reason, some people consider the consumption of sheep meat more acceptable than beef, pork or poultry.

*Q.4* Egg-milk (*ovo-lacto*) vegetarians run little risk of malnutrition. Vegans risk Vitamin B12 deficiency, though this vitamin can be artificially produced using micro-organisms and is added to savoury spreads such as Barmene. Vitamin D deficiency is another risk, though in most cases enough of the vitamin is made by the effect of sunlight on the skin. There have, however, been a number of cases of Asian vegetarians in urban areas suffering from rickets. Problems can also arise with people who are recent converts to vegetarianism: for example, rickets is quite common among Rastafarians who are new to vegetarian diets.

At one time it was considered that vegetarians ran a serious risk of protein deficiency. This is now considered unlikely, partly because nutritionists have revised downwards their earlier estimates of daily protein requirements, and partly because shortage of essential amino acids can be compensated for by eating balanced combinations of protein sources (for example, nuts with cereals).

*Qs 5 and 6* It is of course perfectly possible for omnivores to eat healthily by reducing their consumption of saturated fats from certain dairy and meat products, and including plenty of high-fibre food.

### **Other activities**

It is likely that there will be vegetarian students in the class, and they could tell the others about the food they eat, and perhaps bring in samples.

### **Other resources**

The Vegetarian Society can provide extensive information. Write to The Vegetarian Society, Parkdale, Dunham Road, Altrincham, Cheshire WA14 4QG, enclosing a stamped addressed envelope.

Likewise the Vegan Society, 33/35 George Street, Oxford OX1 2AY.

Information on the case for animal food production can be obtained from The Meat and Livestock Commission, PO Box 44, Queensway House, Bletchley MK2 2EF.

*Acknowledgements* Figure 1 supplied by The Vegetarian Society; Figure 2 supplied by Berrow's Newspapers; Figures 3 and 4 are reproduced by permission from *Science* by Graham Hill and John Holman (Nelson).

## VEGETARIANISM

About three in every hundred people in Britain are vegetarians — and the number is growing. What makes people become vegetarians? What are the advantages and disadvantages?

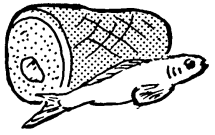

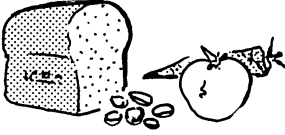


Figure 1 A selection of vegetarian dishes

### Types of vegetarians

There are two main types of vegetarians. Neither type lives on vegetables alone. All vegetarians eat a wide variety of plant foods. This includes bread, cereals, nuts, pulses (peas, beans, lentils, etc.) as well as fruit and vegetables. **Vegans** eat only plant foods. Most vegetarians are '**egg-milk**' vegetarians who eat eggs and milk products as well. Table 1 sums it up.

Table 1

	MEAT and FISH 	EGGS, MILK, CHEESE, etc. 	PLANT FOODS: nuts, cereals, vegetables, fruit, etc. 
OMNIVORES (meat eaters)	✓	✓	✓
EGG-MILK VEGETARIANS	×	✓	✓
VEGANS	×	×	✓

### Why be a vegetarian?

Vegetarianism may be quite new in Britain, but in parts of the world it has been the normal diet for centuries. About two-thirds of all the people in India, for example, are vegetarians.

There are a number of reasons for becoming vegetarians. For many people the most important reason is moral — to prevent cruelty to animals.

### The cruelty argument

Vegetarians believe it is wrong to make animals suffer to provide our food. Eating meat means slaughtering animals, and in Britain animals are often kept in unpleasant conditions in 'factory farms'. Vegans go further. They say that although milk and eggs do not directly involve slaughtering animals, they do cause suffering. To produce milk, for example, farmers separate cows from their calves shortly after birth.



Figure 2 Inside a slaughterhouse

### The health argument

Vegetarians believe their diet is healthier in many ways. Three important points are:

- *Fat* Most food experts recommend that people should cut down the amount of fat they eat. Vegetarians generally eat less fat, because meat products often contain a lot of fat. Sausages and burgers are particularly fatty. What is more, animal fats tend to be of the *saturated* type, which many doctors believe may help cause heart disease.
- *Fibre* Dietary fibre is the part of food that cannot be digested. It passes practically unchanged through the gut from the mouth to the anus (Figure 3). Many doctors now believe fibre is an important part of the diet. It keeps the contents of the gut moving, preventing constipation. It may also help prevent more serious diseases like cancer of the large intestine.

You can only get fibre from vegetable foods. There is none in meat. Vegetarians generally eat about twice as much fibre as omnivores.

#### Questions

- 1 Many vegetarians refuse to wear leather. Why?
- 2 Most vegans refuse to wear wool. Why? Why don't all vegetarians object to wool?

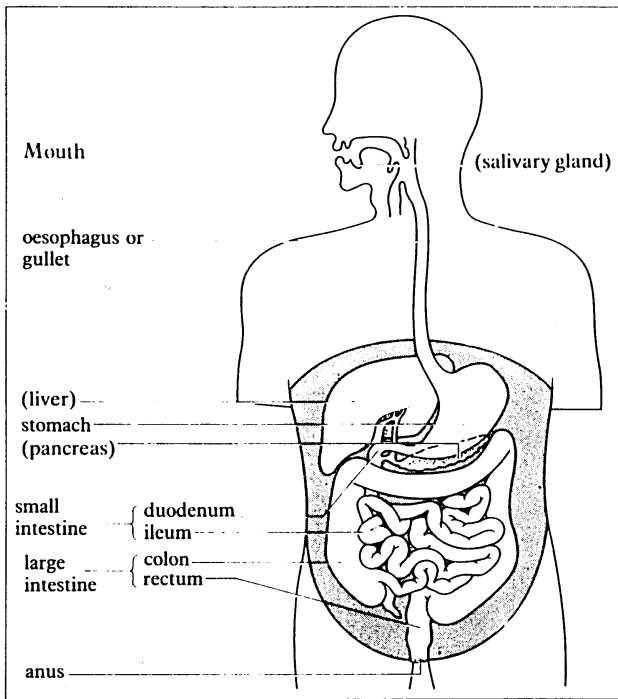


Figure 3 The human digestive system. Fibre passes through unchanged, from mouth to anus.

- **Obesity** Vegetarian meals tend to contain more bulky high-fibre foods which make you feel full. This makes vegetarians less likely to over-eat and get fat (obese). On average, vegetarians have 30 per cent less body fat than omnivores. However, vegetarians may have to be more careful than omnivores to make sure they get all the nutrients they need.

**The economic argument**

Using farmland to raise animals is an inefficient use of land. Figure 4 illustrates what happens when a cow grazes in a meadow, turning grass to beef. Only a very small part of the energy available in the grass gets converted to beef. Most of the available energy is used by bacteria and other herbivores, and in the cow's own respiration, faeces and urine.

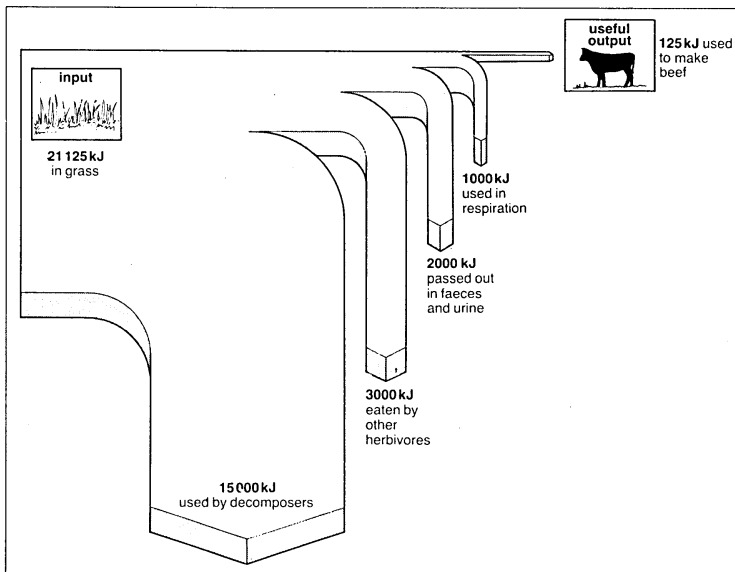


Figure 4 Converting grass to beef

As Figure 5 shows, most of Britain's agricultural land is used for raising animals, either directly or indirectly.

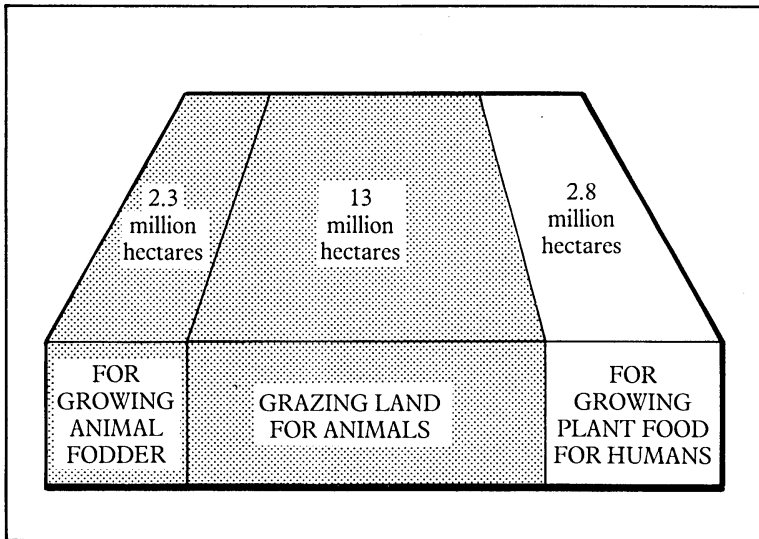


Figure 5 How Britain's 18 million hectares of agricultural land are used

Britain has 18 million hectares of agricultural land. It has been estimated that just 5 million hectares of this land would be enough to feed the whole population if we all ate plant foods alone. Figure 6 shows this idea in a different way.

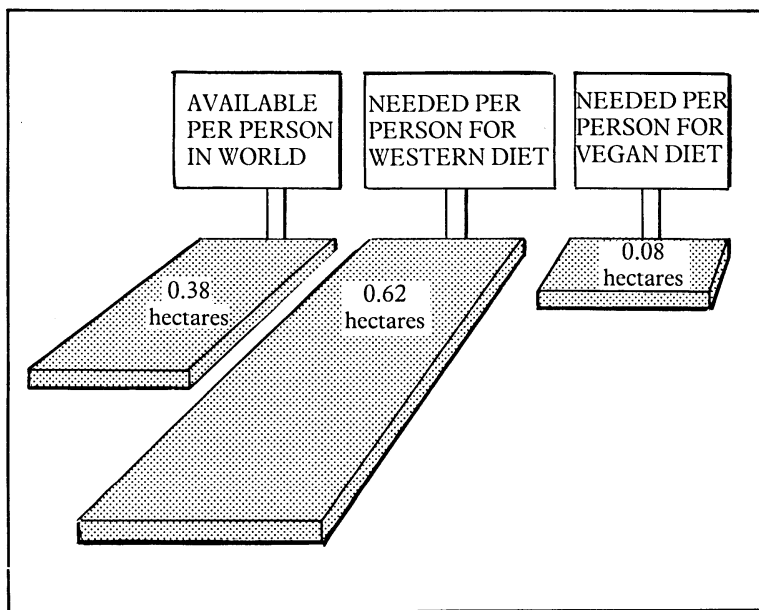


Figure 6 Comparing the land needed to support a person on different diets

All this means two things. First, a vegetarian diet is cheaper for a person to live on. Second, if more people were vegetarians, there would be more agricultural land available. This could help to feed the world's growing population.

*Question*

- 3 Suppose Britain used more of its agricultural land for growing plant foods for humans instead of animals.
  - (a) What might be the advantages and disadvantages to
    - (i) British people
    - (ii) Hungry people in other parts of the world?
  - (b) Would there be any disadvantages in doing this?

## Are there any objections to being a vegetarian?

As we have seen, there are a number of positive reasons for being a vegetarian. But from the point of view of an omnivore there are also a number of objections.

### Variety

Meat and animal products add variety to food. Vegetarian food often seems dull to omnivores, though in fact there is a wide range of interesting vegetarian dishes.

### Health

We have already seen that a vegetarian diet *can* be more healthy. But it is *easier* to get all the nutrients and other substances you need if you are an omnivore.

Table 2 shows *some* (but not all) of the nutrients needed for a healthy diet. It also shows some of the foods that are particularly good sources of these nutrients.

Table 2 Some of the components of a healthy diet, and foods that are particularly good sources of these nutrients

	Protein	Carbohydrate	Fat	C	Vitamins D	B12	iron	Minerals calcium
Animal products	meat, fish, milk, eggs, cheese, etc.		meat, butter, cheese	liver	liver, fish oil, cheese, eggs	meat, cheese, eggs	meat, eggs	milk, eggs, meat, fish, cheese
Plant products	nuts, pulses, cereals	cereals, pulses, fruit, potatoes	butter, cheese, nuts	fruit, vegetables			pulses, green vegetables	green vegetables, bread, potatoes

Answer questions 4 to 6.

In fact it is perfectly possible for vegetarians, including vegans, to get all the nutrients they need. Some people belong to communities with traditions of vegetarianism. They have developed the recipes needed to make sure they get all the nutrients they require. But people who have just changed to being vegetarians from an omnivorous diet do need to be careful to eat the right things.

#### Questions

- 4 Which of the nutrients in Table 2 is each of the following groups of people likely to be short of:  
(a) Omnivores, (b) Egg-milk vegetarians, (c) Vegans?
- 5 How could an omnivore avoid eating too much fat?
- 6 How could an omnivore make sure of plenty of fibre?

## Points for discussion

These points are best discussed in small groups of three, four or five.

- Which of the different arguments for vegetarianism do you find most convincing?
- It is impossible to eat without killing *some* kind of living thing. Omnivores are generally prepared to kill cows, pigs, sheep, chickens and fish for food, but not usually horses or humans. Vegans only kill plants, but not animals. How do we decide where to draw the line? When is it immoral to kill for food, and when is it all right?
- If people enjoy eating meat, is there any reason why they shouldn't?
- What kind of compromises are possible? Is it possible for an omnivore to go some of the way towards being a vegetarian?
- Animals kill each other for food, so why shouldn't we kill them?
- Few omnivores would enjoy working in a slaughterhouse. If you are going to eat meat, should you be prepared to kill animals yourself?
- Do you approve of people going fishing for their food?
- Would the world be a happier place if everyone was vegetarian?