

USING FARMLAND EFFICIENTLY

‘We’ve got to start feeding our livestock waste products’

To be able to feed the growing world population, we actually need to carry on eating some animal protein, reckons researcher Hannah van Zanten, because it requires less land than a completely plant-based diet. As long as we feed the livestock on waste products and leftovers.

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As a little girl, Hannah decided after a visit to a children’s farm never to eat animals again. And she still doesn’t, now aged 33 and a postdoc at the Animal Production Systems chair group in Wageningen. Her two children do get meat occasionally, though. And actually that makes them better world citizens than their mother, at least according to the thesis for which Hannah van Zanten was awarded her PhD with distinction last summer. She suggests in her thesis that for the sake of efficient land use and food security we should in fact consume a little bit of meat. ‘We don’t all have to become vegan to save the planet,’ says Van Zanten.

This message is music to the ears of diehard meat-eaters. Because even they sometimes feel their consciences nagging: a cow or a pig needs an awful lot of kilos of plant protein to produce just one kilo of animal protein.

So you can feed more people on a plant-based diet, making it a better choice for the world food supply: that is the assumption. And it is good for the planet too, since livestock farming takes up a lot of space and causes a lot of pollution, mainly because we grow tons of livestock feed and transport it around the world. This accounts for most of the environment damage done by livestock farming: half of the greenhouse gas emissions, 60 percent of the energy consumed and two thirds of the total land devoted to livestock. What is more, there is competition between ‘feed’ and ‘food’: feed largely destined for animals in the west supplants food crops for people in developing countries.

But in spite of the disadvantages associated with livestock farming, considerations of space and food security make it unwise to scrap animal protein from our diets completely, concludes Van Zanten in an opinion >



piece in her thesis. That is, at least, as long as we feed pigs and cows on waste products and leftovers we either cannot or do not want to eat ourselves, such as waste from the food industry, discarded food or grass from uncultivable land. This unusable food waste is then converted into protein-rich meat and milk.

VEGETARIAN

‘I am not say that you shouldn’t be vegetarian or vegan,’ says Van Zanten. ‘But if the whole world did so, then in nutritional terms you wouldn’t make use of waste products, leftovers and grass. That is bad news in terms of efficient land use or of food security. Because it means more plant protein is needed and therefore more farmland than would be used for a moderate intake of animal proteins based on waste flows.’

But what about the environment? Is it not better, for example, to use those waste products to generate bio-energy? ‘No,’ says Van Zanten. ‘Solar and wind energy are good options; we are better off using the waste products to feed cows and pigs. That is the most efficient way to use farmland.’ This is an important point, says the PhD graduate, in view of the fast-growing world population and to prevent the last wildernesses on earth from being tamed for food production.

In her opinion article Van Zanten calculates how much animal protein is available per person worldwide if the livestock is fed on waste products. She starts with a vegan diet which meets our basic needs. In producing this diet, the food industry ends up with waste products such as soya meal or wheat bran, products we do not eat but which animals can thrive on.

On top of that, a lot of food gets thrown out, sometimes because it is past its use-by date. ‘The FAO assumes that one third of our food ends up in the waste bin. That is an extremely large proportion and we are trying to reduce it, of course. So I based my calculations on 10 percent,’ says Van Zanten.

Van Zanten calculated how many pigs you can raise on that 10 percent as well as waste products in the industry, and it works out at two thirds of a pig per year per person, about 14 grams of protein per day. ‘Without using any farmland for livestock feed.’

There are a few hurdles to be cleared, however, before this vision becomes a reality. Leftover food will have to be collected, for instance. There is no system for that yet. What is more, feeding leftover food to pigs is currently prohibited in Europe for food safety reasons such as the danger of transmitting diseases.

On top of the 14 grams of protein in the form of pork, meat-eaters would be able to obtain three grams of protein from beef. This would be the protein produced by cows grazing on marginal grasslands: grasslands that are so wet, dry or remote that they are not commercially viable for arable farming. Such land can produce more animal protein per hectare than plant protein. An example in the Netherlands would be the soggy meadows in peaty areas.

‘At present cows also graze on land that is suitable for arable production,’ adds Van Zanten. ‘If you include that in the calculations, the three grams increase to seven grams of beef protein. At the moment we do not need those grasslands for food production, so why not let the cows enjoy grazing it? If land becomes really scarce and the world population grows, it might come under pressure. Then you might lose those four extra grams again because it would be more efficient to grow plant protein on that land. The important point is that by making optimal use of waste products, the livestock sector can produce a considerable amount of protein without creating any feed-food competition for land.’

FOLLOW-UP

The figures may sound very precise – 21 grams of animal protein, 14 from pigs and 7 from cows, per head of the human population – but they represent a provisional estimate. Van Zanten included two animal species in her calculation, the omnivorous pig and the cow, as a ruminant. In the follow-up study that is now running, she is going to go into more depth and include chickens, sheep, goats and fish, as well as zooming in on differences between livestock breeds in how they process feed. Moreover, explains Van Zanten, the results of the calculations are significantly influenced by choices made by the food industry. Her calculations were based, for instance, on soya meal, a by-product of soya oil produc-

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tion which pigs thrive on. They don’t do so well, however, on the waste from the manufacture of sunflower oil or the ever more popular rape seed oil. ‘Those waste products are of low value. They are not much use to pigs. On the other hand, new technology – such as fungal treatments to make straw more digestible – can produce more animal protein.’

REACHING LIMITS

The provisional total yield, 21 grams of protein per person per day – the equivalent of a small meatball – is one third less than the current average worldwide intake of 32 grams per person. ‘In the Netherlands we’re on 71 grams of animal protein per person, so that needs to go down a lot.’

If we do indeed start eating far fewer animal products, will we then be able to cope with the growth in the world

population with the limited amount of farmland we’ll have at our disposal? ‘Estimates suggest that with 9.7 billion people on earth in 2050, there will be 0.16 hectares of farmland per person. The current heavily meat-based western diet requires about 0.20 hectares per person, while a healthy vegan diet requires 0.14 hectares per person.’ So there would seem to be enough farmland for either a vegan diet or the Van Zanten diet with its modest quantities of meat. ‘But we don’t use land for food alone; we also grow medicinal plants, cotton and energy crops. How much that amounts to, I don’t know. And how important are those crops to us? Will there be alternatives to them? It is not easy to say when we shall reach the limits to the available farmland. I would have liked to calculate that.’ ■

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MEAT UNDER PRESSURE

In January this year the Dutch National Institute for Public Health and the Environment (RIVM) made an insistent call for a reduction in the consumption of meat, cheese and milk. This is the only way we can achieve our climate targets, writes the institute in a report called *What’s on our plate*. ‘Meat has a healthy image in many people’s minds and the negative environmental impact is underestimated,’ says the report. Livestock farming is responsible for 15 percent of the emissions of greenhouse gases. RIVM suggested an extra levy on unhealthy and relatively unsustainable foods, including soft drinks and meat. This would reduce both chronic diseases and environmental costs. At the annual Agro debate hosted by Wageningen Economic Research, also in January, the Wageningen economist Hans van Meijl argued for similar measures. According to Van Meijl, the government needs to make people see and feel the ecological costs of

our current food production system. This can be done by means of a CO2 tax and meat and sugar levies.

Martin Scholten, director of the Animal Sciences Group in Wageningen, also argued for a change of course, in an opinion piece in the newspaper *Het Financieele Dagblad*. He predicts that greenhouse gas emissions can be halved by ‘dealing with the animals, their feed and their manure’ in smarter ways. He does not support the idea of a meat levy, he told the Dutch television news programme RTL Nieuws. Research in Denmark has shown that it doesn’t work, says Scholten. And a tax of that kind only swells the government’s coffers. The costs of making products more sustainable should be reflected in their prices. ‘That would make a meat tax superfluous and would ensure that the profits return to where they can be used for sustainable investments.’