

THE MENU OF THE FUTURE



Would you eat steak that has been grown in a lab? Grasshopper gratin, anyone? How we eat is changing and, frankly, it needs to. We reveal what might be in your shopping trolley soon

BY HANNA MARTON

In the 2014 sci-fi film, *Interstellar*, Matthew McConaughey plays the role of an astronaut tasked with finding a new world for the human race because earth has become uninhabitable. The land is arid and crops have been ravaged. Spoiler alert: McConaughey eventually saves the day, but at great risk and personal sacrifice. I mean, he hurtles through wormholes. But the whole palaver could have been avoided if they had just made some changes to the way they ate.

Here on earth in real life, we have many mouths to feed. The global population of eight billion people will grow to 9.8 billion by 2050. "An inescapable fact we face going into the next few decades is that there isn't enough arable land or fresh water on the planet for everybody in the world today to eat the way we do in Australia," says food futurist, scientist and consultant, Tony Hunter.

That might sound dystopian, but Hunter is optimistic. "There are many new technologies and options coming up to enable us to sustainably, healthily and equitably feed everybody on the planet. It's the most exciting time for the food industry in over 30 years."

With only one per cent of its land available for agriculture, Singapore is leading the charge. The urban oasis has approved the sale of game-changing foods such as meat grown in labs and protein powders made literally from thin air. In Australia, scientists are future-proofing crops and making insects edible. Food is changing.

"In 2033, there will be food on the supermarket shelf that doesn't exist today, and it will be as nutritious and flavoursome as anything we see now," says Hunter. And we won't need a Southern-accented spaceman to save us. Not that we'd complain if he did.

CULTIVATED MEAT AND FISH

Different to plant-based alternatives, cultivated meat is animal produce grown in a 'bioreactor' (apparatus used for biochemical reactions, such as fermentation) rather than coming from a cow, sow or ewe. Thomas King, founder and chair of think tank, Food Frontier, was one of the first people to sample cultivated shrimp dumplings in Singapore, and has tried cultivated chicken products in the US. Does it taste and look like the real thing? "Yes, is the short answer, because it is. Cultivated meat is meat produced directly from cells."

Lab-grown meat could be optimised for nutrition,

with lower saturated fat and cholesterol or higher omega-3 fatty acids, vitamins and minerals. It could be customised to suit an individual's needs. "In older populations, where dysphagia causes problems with chewing or swallowing, for example, the texture profile of meat could be changed," says King.

Cultivated meat might also take the pressure off livestock farming, which accounts for almost 15 per cent of greenhouse gas emissions and uses 26 per cent of earth's ice-free land for grazing.

Last month, Sydney-based purveyor of fine cultivated meats, Vow Group, lodged an application with

Food Standards Australia New Zealand (FSANZ) to approve its quail-meat product. But is cultivated meat safe? "Australia and New Zealand have one of the strongest food safety and regulatory systems in the world," says King. "Assessment will be rigorous and if FSANZ deems cultivated meat safe, consumers can have confidence that it is."

EDIBLE INSECTS

Anyone for cricket? Eating bugs might seem wacky, but according to the United Nations, it's nothing new – two billion people consume insects globally today. But large-scale farming of nutritious, environmentally friendly



The new buzzword in food

insects could help solve food insecurity as the world's population grows apace.

Edible insects such as crickets and grasshoppers produce far less greenhouse gases (think methane) than livestock and require less feed and land, but have just as much protein. University of Queensland scientists have been working hard to make black soldier fly larvae (as in maggots) more palatable for consumers. The larvae boast more iron and zinc than lean

meat, and the same amount of calcium as milk.

Just one acre of black soldier fly larvae offers more protein than cattle requiring 2500 acres, or 130 acres of soybeans. They dine on food waste, too, converting scraps into useful compost.

After the bacteria is killed and the larvae is processed and dried, it's almost undetectable. "We made a burger replacing up to 33 per cent

of the meat with black fly larvae, cooked, and you couldn't tell the difference," says Professor Louw Hoffman, a meat scientist at the University of Queensland. Drive-through larvae burgers? Really? "The reality is that we need to look at alternative protein energy sources to feed the world," insists Hoffman.

GENE-EDITED PRODUCE

Using gene-editing technology, such as clustered regularly interspaced short palindromic repeats (CRISPR), food scientists can modify the DNA of a crop to make it more healthy, high-yielding and resilient to disease and the changing climate.

Unlike genetically modified organisms (GMOs), where DNA is transferred from one species to another, gene-editing crops involves changing the existing DNA slightly to improve it. Leafy greens can be made to taste better, mushrooms can be slower to brown, tomatoes can offer more vitamin D. The possibilities are endless.

Biotechnologist Dr Karen Massel, from the Queensland Alliance for Agriculture and Food Innovation, is using CRISPR to make the gluten-free grain sorghum withstand changing climate conditions. "Sorghum is a wonderful crop that feeds half a billion people each



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year. I'm trying to make it the next wheat," she says.

If genetically altered food gives you the heebie-jeebies, you might need to get over it – because chances are you're already consuming it. "A good example of a plant that's genetically modified is the papaya," explains Dr Massel. "The papaya industry was almost decimated by the ringspot virus back in 1994. Many researchers put in a ton of money to make a ringspot-resistant variety of papaya. That's what's grown in 96 per cent of the world now – so if you've eaten papaya, it's very likely modified. And you'd have no idea."

3D-PRINTED FOOD AND DRINK

On the menu at some Marco Pierre White restaurants in the UK is plant-based faux steak with the same taste and texture ('mouth feel') as a real whole cut. While cultivated meat is actual meat grown from cells, this version is made with 3D printers by Israeli start-up, Redefine Meat, and mimics beef that 'pulls apart'. "A Michelin-starred chef is putting his reputation on the line to sell

alternative plant-based products in his restaurants," says Hunter. Enough said.

In Vienna, another food-tech company, Revo Foods, has created a hyperrealistic 3D-printed salmon fillet from pea proteins and algae extracts that's due to hit the European market soon. And it doesn't skimp on omega-3 fatty acids or protein.

It is possible we'll have 3D food printers in our kitchens in the future, says Hunter. And drink printers aren't far away. Cana One is the world's first molecular beverage printer, an on-bench appliance that serves up an almost-infinite list of drinks. "They call it the Netflix for drinks," jokes Hunter, with cocktails, wine, soft drinks, sports drinks, seltzers, iced tea – and for the hipsters, cold-brew coffee – at your fingertips. You can adjust sugar, caffeine and alcohol levels, too. In the US, early adopters are already pre-ordering drink printers, due for shipping this year.

FOOD MADE FROM AIR

Using modern-day sorcery, Finnish company Solar Foods has created a protein source literally out of thin air. It's a turmeric-coloured powder called Solein that's not plant or animal, but is made of microorganisms which are fed with carbon dioxide, hydrogen and oxygen.

Because Solein doesn't really taste like anything, it can easily be added to a smorgasbord of food and beverages, such as alternative meat and dairy, snacks, pasta, breads and spreads. It contains fibre, fat and nutrients, including iron. Best of all, this potent powder doesn't rely on agriculture so it can be produced anywhere: deserts, arctic regions, cities and even space. Whether Solein gets made in Australia in the future, though, is, well, still up in the air.

Future-proof your food

Four ways you can fuel your body and help the planet – right now

EMBRACE HEMP

Hemp seeds are a good source of protein and essential fatty acids, and crops are hardy, so require little fertiliser or pesticides. And because hemp foods are made with the non-THC (the main psychoactive compound in marijuana) seeds of the cannabis plant, they won't make you 'high'.

SEIZE VITAMIN C

Consuming a solely plant-based diet? Unlock more absorbable iron from leafy green vegetables by consuming vitamin-C rich foods at the same time, suggests Dheepa Jeyapalan, dietitian and manager of Healthy and Sustainable Food Systems at VicHealth. A lemon dressing on salad, for example.

SAVOUR SEAWEED AND KELP

Underwater forests of kelp and seaweed, the fastest-growing plants on the planet, are being cultivated in order to absorb more CO₂, feed fish and bolster menus. Rich in magnesium, iodine and calcium, seaweed is a staple for many chefs, including Sydney's Tetsuya Wakuda OAM.

POWER UP WITH ALT-PROTEINS

No longer limited to rubbery burgers, the alternative-meat market is booming. "There are over 300 plant-based 'meat' products in supermarkets – up by a third since 2021," says King. And they're not just for vegans; last year Woolworths found 88 per cent of plant-based buyers also bought meat.