According to the Food and Agriculture Organisation of the United Nations, food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life.

IN order to feed the world sustainably we have to have enough high-quality food available to every person. Providing this food security is a complex task. Presently many developing countries do not have enough high-quality food or no food at all. And within the next 20 years, we have to feed about eight billion people – two billion more than at present.

This task is very urgent and it needs to be addressed using a range of different strategies. There are various approaches that can be pursued. One way is to improve the stability of food supply, especially of staple foods like cereal crops. Environmental conditions can threaten the stability of the food supply. For instance, Australia faces drought and saline soils, especially in South Australia.

These conditions have detrimental effects on food production and yield. Part of the solution is to improve food production using technologies like breeding, engineering, farm management and genetics. One area where we can utilise genetic technology is in salinity tolerance. When plants take up water with their roots they also take up the toxic salt (in this case sodium) that can reduce their growth and grain yield. Some plants have specialised genetics to produce “salt-pumps”, which can help them move salt back into the soil, where it cannot harm them. We know that the production of salt-pumps in plants is determined by specific regions in the genome, which is the biological blueprint that helps control the function of organisms.

We are analysing model plant species such as Arabidopsis, a small plant with better characterised genetics, to learn how their salt-pumps are regulated. Using this information we are aiming to find ways to help other plants that are not so good at pumping salt back into the soil, such as cereal crops, to improve their salt-pumps efficiency. Understanding how plants function using a genetic approach then using that knowledge to improve other plant species, like cereal crops, offers potential to raise grain yield, especially under unfavourable conditions like salinity. This is one way to increase production and help feed the world sustainably.

Sarah Kipling is a PhD student at the Australian Centre for Plant Functional Genomics and School of Agriculture, Food and Wine, University of Adelaide.

To find out more about the 10 Big Questions, go to: http://ua.edu.au/sciences/10bq

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Published by The Advertiser Newspapers, 31 Waymouth St, Adelaide, SA 5000.

HAPPY AT HER WORK: Teacher Kate Gladstone building relationships with Phoebe and Madison.

KATRINA STOKES

KATE Gladstone drew inspiration from her father, Jim, in her decision to become a teacher.

The 23-year-old is just five weeks into a full-time teaching position at Uraidla Primary School but has been nominated for Inspirational Early Career Teacher of the Year for her work with her Reception/Year 1 class.

Ms Gladstone was drawn to teaching after watching her dad enjoy his own job as a teacher so much.

“He had a huge influence on my decision,” she said.

“But the main reason is that I love working with kids.”

Her Year 2 teacher at Magill Primary School also influenced her decision to pursue the profession.

“I had a fantastic experience throughout my primary school years ... she was one of my favourites.”

After completing her teaching degree at the UniSA, Ms Gladstone was offered a job at the primary school.

She said she was honoured to be nominated for the The Advertiser State Government SA Public Teaching Awards.

“It’s a lot of hard work, but the kids make it all worthwhile,” she said.

“There is never a dull moment.”

Ms Gladstone said it was rewarding to see the “light bulb moment” in the students she taught.

“It’s such a foundation year – they build a lot in those early years.”

Ms Gladstone said she had enjoyed her experience at Uraidla so far.

“It’s a small school, out of the city; it’s such a close community, everyone is so close and family orientated,” she said.

Nominations for this year’s awards close on Monday, June 26.

Nomination forms are available from www.decd.sa.gov.au/teacherawards, your local preschool, school or regional office.