

Would you like greens with that?

February 17 2015, by Robin Powell



Dr Sara Wilkinson tends a tomato crop on a rooftop above Broadway at UTS.
Credit: Peter Morris

What if the greens you need for tonight's dinner were grown on the roof of the office where you work? From a cook's perspective this is a dream – fresh produce and no time wasted on shopping. And the advantages of urban farming extend way beyond the wellbeing of the time-poor consumer. Produce farmed on urban rooftops also contributes to reducing the heat island effect of cities, lowering summer temperatures and minimising the carbon footprint of food.

Rooftop vegetable gardens increase urban biodiversity; decrease stormwater run-off; offer psychological benefits to those involved with the garden and with fellow gardeners; and can even protect and extend the lifetime of the roof.

Interest in green roofs is growing like dandelions in spring: the City of Sydney reports an average of one development application a week for a [green roof](#) or wall. Already, 100,000 square metres is given over to green roofs across the city, and Lord Mayor Clover Moore says the City is doing all it can "to introduce more of these features into our urban landscape".

Yet few are food producing. Sydney's environmental conditions suggest an urban harvest could contribute significantly to food production. The city of Toronto, for instance, which is under snow for three or four months of the year, estimates that 10 per cent of its fresh food could be grown within the city limits.

Research by Dr Sara Wilkinson, Associate Professor in the School of the Built Environment at the University of Technology, Sydney (UTS), aims to fill the evidence gap on urban farming in Sydney. Her study, funded by the City of Sydney, addresses the barriers and provides evidence for best practice in rooftop food production.

The final report was delivered to council late last year. User-friendly guides developed from Dr Wilkinson's findings are being drafted for the council website.

Dr Wilkinson stresses that the goal of [urban farming](#) is not self-sufficiency but to contribute to food production and derive the other benefits of green roofs.

"On food security, food miles, social and psychological concerns, environmental action, it ticks so many boxes to grow food locally," she says.

The first step in her study was to identify appropriate sites for the test gardens. "Factors like access, water and power have to be considered,"

she says, "and then there is the attitude of building managers."

Her expertise is in building adaptation rather than horticulture so she has the background to understand building management concerns. To alleviate these she is developing a template for a rooftop farming licence agreement that will set out the terms, roles and responsibilities of all parties involved in rooftop food production.

The UTS study compared three types of gardens on the roof of three campus buildings. Vegetables and herbs were grown in a raised bed, a vertical garden and a wicking bed.

(A wicking bed waters plants from below through a capillary action that draws water from a reservoir in the base of the container. The soil is separated from the water by a layer of geotextile fabric, and the plant roots take up moisture as needed. The reservoir means that watering – the most labour-intensive aspect of container-gardening – is reduced from every second day to about once a week.)

Of the three types, the wicking bed proved the most efficient. It was the cheapest to establish (\$412 plus labour), required the least water, produced the largest harvests, was easiest to transport, assemble and to garden.

The beds were planted with eggplant, zucchini, basil, carrots, beetroot, lettuce, chilli, capsicum, silver beet, celery, rocket, mizuna and marigolds. Soil toxicologists studied the produce before it was harvested for consumption, to allay concerns about pollution from the busy Broadway traffic several floors down or from other sources such as water or soil.

Initially, traces of lead were found, but after one crop, as the garden established itself, naturally occurring micro-organisms in the soil

absorbed the lead in a process known as bio-remediation. Subsequent tests showed the produce was clear of contaminants.

Of the produce grown the silver beet gave the best results for the least time and effort.

The next stage of Dr Wilkinson's research is to apply the findings in the corporate and commercial sector. She is in discussions to introduce [food](#) production to the rooftops of commercial buildings in Sydney's central business district. Though it's not here yet, the future may offer salad and sides from the rooftop of your workplace or apartment block.

Findings from Dr Wilkinson's research will be part of a book, *Building Resilience in Urban Settlements: Green Roof Retrofit*, to be published by Wiley Blackwell next year.

Provided by University of Technology, Sydney

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