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# WEATHERING THE 'PERFECT STORM'

Addressing the Agriculture, Energy, Water, Climate Change Nexus

The Crawford Fund  
2019 ANNUAL CONFERENCE

Parliament House, Canberra, Australia

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Editor Ann Milligan

## Q&A

Chair: Chris Tinning

Panel: Aditi Mukherji, Marc Noyce

**Q: Jack, The University of Adelaide**

I think in the last week or so, President Joko Widodo announced that they're going to move Indonesia's capital city Jakarta due to the groundwater issues and the city sinking. Do you have any suggestions on how Indonesia or other countries can plan to prevent these issues happening again?

**Q: Peter Wynn, Charles Sturt University**

Is there any way, or have you thought of using grey water from urban areas to send out into the adjacent rural areas; and also, could you comment on desalinisation as a potential source of water for agriculture?

**A: Aditi Mukherji**

I think there is a lot of scope for recharge of groundwater in urban areas, except that because we have built up everything it becomes really tricky. In some of the discussions that are going on, around urban renewal, urban regeneration, you are building your infrastructure in such a way that it also allows groundwater to be recharged. I don't specifically know about Indonesia, but most cities in South Asia, for instance, have been also building on all the drainage lines of the hydrological cycle and then people are so surprised, and ask "Why are floods increasing?". I think, proper urban planning is the way to go.

In India, any vegetable you're eating, chances are it's been grown with untreated grey water because pretty much all the developing countries around the world do use grey water to grow crops, especially vegetables. I was recently in Switzerland where it is usual to treat stormwater to such an extent that it's drinkable. They were thinking of treating some water less thoroughly so as to use it for growing crops. Also in Ghana, and in Ethiopia, and in a lot of Asian cities, there is a lot of reuse of water. As for desalinisation, I think Chennai for instance is seriously considering desalinisation as one of its various options, but it still remains expensive.

**Q: Tony Fischer, CSIRO Canberra**

Dr Mukherji thank you for that great overview of water in India. To give us an idea of the extent of over-pumping, is it 5%, 10%, 20% – did you have a rough idea? For example, for the Punjab or Haryana?

**A: Aditi Mukherji**

No, I won't have that number; I can look it up, but in relation to long-term renewable recharge. Many of the districts in Punjab have over-exploitation of 250%, which is 250% more than the volumes being renewed.

**Q: Razlin, Southern Cross University, NSW**

Two questions for Marc. The species that are able to be planted in your garden beds, are they limited? And, do you have particular interest in global niche crops

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This Q&A report has been prepared from a transcript.

or minor crops that have cultural significance, especially in areas such as sub-Saharan Africa and south Asia?

**A: Marc Noyce**

Good question. Our initial product is only 200 mm deep. The Foodcube is over 300 mm deep and then it has its soil cones, so it's 500 mm top to bottom. The taro that is sold in Tuvalu (i.e. not the large swamp taro) grows in a 150 mm pot. So the Foodcube's actually quite appropriate to grow traditional crops.

**Q: Ros Gleadow, Monash University**

Marc, you mentioned briefly that temperature could be an issue, that the soil could get too hot. I'm wondering if you've come up with some solutions or ideas for moderating the heat for the containerised growing?

**A: Marc Noyce**

The food walls that we have over there, they're suspended in the air and they can heat up. The Foodcube is on the ground. We expect that that will have a heat exchange opportunity with the ground itself, and it's much larger in thermal mass as well. They can be combined with some shading – and we can potentially produce them with different colour options available. Part of our trial is to really understand that temperature build-up and its dissipation and its effect on plant growth; so we'll be monitoring that very closely with ACIAR.

**Q: John Hancock, Research for Agriculture**

Marc, I'm presuming that you've probably encountered the venture capital scene through some of the work that you've been doing on the agricultural goals that we're trying to achieve. Do you have any key take home messages for us today on the capital-raising journey you've experienced? In the venture capital scene or the private investment sector in agriculture in Australia?

**A: Marc Noyce**

In fact, we self-funded all our development within our private company. Whatever product we develop we self-fund so we don't have any debt. But if you go for venture capital you then give up a certain percentage of your company to someone else and you've got to be willing to take on that additional scrutiny, if you like, and also other partners coming in to satisfy the venture capital company. You just need to balance up the level of control you're willing to give up, for accelerated uptake. Does that answer that question a little bit?