I farm on the northern edge of the cropping zone in South Australia. So rainfall here is around about 300 to 350 millimetres, but really highly variable. So yeah, we can have some classic droughts and some fantastic years. And I've always seen that variability that we have here is as an advantage, it's an opportunity rather than a threat. So I've sort of looked to develop systems where we can actually use that variability to our advantage. And you really take on the risk of that, risk creates return. So let's see if we can take that variability on and use those good years better. One of the ways of course we look to do that is through the use of seasonal forecasts.

An ongoing challenge is that seasonal forecasts are probably still in this category of sort of too good to ignore but difficult to rely on all the time. So part of that is to working out when they are giving us something that's better than guessing and that seems to be pretty much when we're getting strong climate drivers and certain times of the year. So more as we move from winter predicting into spring, seems to be the time that these forecasts are giving us more information. Even then, the forecasts are only changing the chance.

A long time ago we used this idea of using a probability wheel or a chocolate wheel and say that if, for example, if we're making a decision on top dressing nitrogen, making that decision in late winter for spring, we have an equal chance of the season being in the top third of seasons or the lowest third of seasons. And we spin the wheel and we have equal chance of any of these occurring. With say a El Niño outlook that increases the chance of being in the bottom third, but it doesn't guarantee it.

If we accept that the best way to think about this is a shift in probabilities. The question then is, well, how do we use that in decision-making? And I've heard people say to me sometimes, that was a nice talk on probabilities but in the real world, farmers have to make decisions. And the sort of implication from that is in the real world, you've got to convert the probability to a single outcome. It's going to be dry, it's going to be wet, we have to make a decision. I guess my response to that is that probabilities are used for decision-making all the time. The idea that you have to convert a probability of the future into a single outcome is incorrect. There are simple ways that we can work through that. So we've got a rich source of understanding about deciles and probability, how do we use that to link that with forecast and making decisions?

So this is just a simple spreadsheet that we've called Rapid Climate Decision Analysis. The idea is for it to be rapid, to do this quickly, to get it out of our heads into a spreadsheet, to think about a range of possible futures, a range of possible states of climate. And then we look at what that is using all years and that's often the most valuable part is just thinking about that risk. Now, this is a case of slowing down and thinking about this. We wouldn't say you should do that for everything on a farm you would want this to be tens of thousands of dollars sort of cost. Because if you do it for everything, you are going to just go mad. But for bigger costs it's sometimes worth just doing some of these sums and working through them and thinking it through.

If you're thinking about top dressing, if I don't top dress, I have the blue line which is the same across there. And if I do top dress, I'm going to make more profit in the wet spring and less profit in a dry spring. This is just simply a way of looking at there's an upside opportunity and a downside risk. And most people intuitively understand this, that there's risk and reward. And basically it's sometimes worth spending a little bit of time looking at those trade-offs. This is just budgeting across different deciles. Now, if you're going to budget, you naturally have to make some assumption about the climate. So if you're budgeting, you're making some assumption. Now you might do that, you might assume decile five, decile three, or decile seven. But here we're just saying do it for a bigger range of deciles, not everyone, and we'll just interpolate between them.

What we're suggesting that this is something that can be used for a whole range of decisions, as just a way to improve the conversation. To let's just have the discussion because the end point is not the answer it gives us it's how do things change and what's the shape of that and how does that generate discussion and learning about risk in this situation and how would forecasts interface with that?

What we do, our outcomes, are just so heavily dependent on the weather and climate that occurs after we take on an action. And so there's an incredible amount of interest in the ability to look into the future and determine what's going to happen. The challenge I believe is actually taking that interest and actually turning into value. To achieve that, there's a number of boxes that we have to look to tick.

First box we have to look to tick is actually how reliable is the seasonal forecast that we're being provided with? The second box actually is what are some of the decisions that we actually can make that actually the forecast can derive value for? And when you think about it, there's actually not a lot. Most of the decisions we take on farmers, the actions we take on farm, tend to be taken in terms of best practice. The actions and the outcome of those actions are going to be very heavily dependent on what happens with the climate afterwards but we're not going to change the actions. But there are certain decisions that are actually sensitive to the climate that occurs afterwards, there'll be regret or satisfaction depending on how the climate occurs. And so we have to identify what those actions are.

A couple of examples of that, when we adjust our nutrition as we're going into spring, so we'll be at the spreading urea or whatever on our crops. Now, clearly, if a lot of rain falls after we spread the nitrogen and on crops we're going to be very pleased with the fact that we've done it. If we don't have rain falling on crops, then we're going to be perhaps a little bit reluctant that we've taken on that decision to spread. Another example of this is when just recently, we've gone into a very wet harvest period. Now that was forecast, so potentially we might've been able to adjust our actions, perhaps using contractors or taking on an extra header or something like that, to take advantage of the fact that we get our crop off earlier in a situation where are we going to potentially get weather damage.

The third thing is actually understanding what the risk profile is, and we tend to do that intuitively at the moment, it's a very easy connect between a forecast and some sort of action and some sort of result. But my experience is that it's actually a really unreliable thing to do that. The difference between actually using a gut and intuition and actually sitting down and doing little bit of analysis on this stuff, using your head over the top of all that, is actually quite significant. So I've done this a number of times, and basically the result you get usually changes significantly. So I reckon their the three boxes you've got to tick, reliability of the forecast, find the decision that actually can be affected by the forecast, and the third thing is actually do some really robust, risk profiling of that. Put all that together.

The danger is if you don't do that, you'll end up using a seasonal forecast, again, creating an interest, yes, but the value is very hard to derive from it.