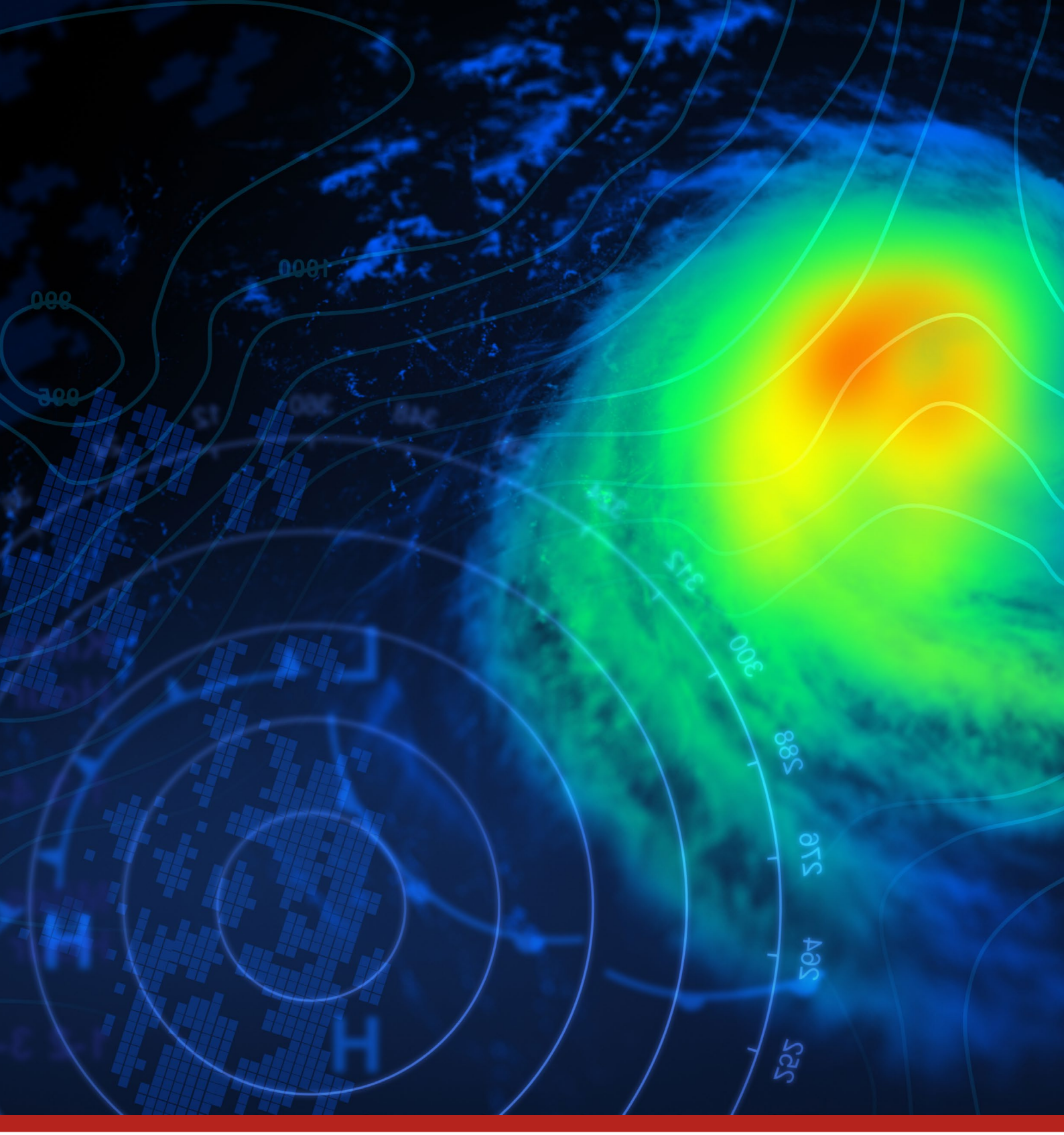

Rural R&D for Profit program
Final Report
Improved use of seasonal forecasting to increase farmer profitability

AgriFutures™ Improved Seasonal Forecasting

Appendix 20

APPENDIX 20

Suggested decisions and comments on decision context (flexibility to respond) and forecast information (accuracy and timeliness).

	DECISION	FLEXIBILITY TO RESPOND	ACCURACY AND TIMELINESS OF FORECAST
1	What to sow and area to sow	Yes	If this decision is in April for most of the grainbelt (because growers are dry seeding more and more) ENSO is in the predictability barrier in March and IOD doesn't come into play until May. The models do not have much skill at this time for the grianbelt of WA
1	How much fertiliser to apply at seeding	Yes	Again, if seeding is May then ok, but if seeding earlier then no
1	How much fertiliser to apply - top dressing 6 or more weeks after seeding	Top dressing can be earlier as late May through to July	Forecast is out of the predictability barrier, however I found that seasonal forecasting is not better than using July-September median rainfall to make decisions about in season top dressing
2	Water budget	Some	No forecast can be guaranteed. When stronger signal for drier then we look at plan B scenarios when known water is low…
2	Feed budget	Yes	No forecast is guaranteed. When more confident in a forecast for downside plus lower feed estimates we look at plan B scenarios
2	Nitrogen budget	Yes	Use soil moisture and crop modelling and longer term perhaps around budgeting or ordering
3	Weaning	Yes - wean early or leave calves on cows (less supplement cost but risk of decreasing cow BCS)	No. Accuracy is not good enough and can be in a worse position if you trust them and they don't turn out to be true. False hope is also crushing to emotions in a drought.
3	Selling cull cows or reducing stock numbers	Selling culls in poor condition for less returns vs selling when fat and market is good or whether to sell pregnant cattle too if season is really poor.	No. Accuracy is not good enough and can be in a worse position if you trust them and they don't turn out to be true. False hope is also crushing to emotions in a drought.
4	Stocking rates (i.e. decisions around selling/ buying livestock)	It depends a bit on the type of operation, but generally speaking yes. - The shorter terms forecasts are arguably most helpful when conditions are tight and you are	Timeliness is good as forecasts are now updated on a fortnightly basis. In terms of accuracy, I think the biggest issue is that the further ahead

		looking at offloading stock. - the longer term forecasts (3-6 months) are helpful in terms of looking ahead and assessing risk in terms of increasing stocking rates, but I suspect producer confidence in longterm forecasting is low.	the forecast period, the less confidence producers have in the prediction. As such, for longer term decisions producers draw on a range of factors including current soil moisture, current pasture conditions, long-term historical rainfall trends etc.
4	Purchasing of supplementary feed (decisions around the amount required)	Yes, the purchasing of supplementary feed is highly flexible and sensitive to forecast information.	Yes, again, the timeliness is good with fortnightly updates now provided by BOM. Longer term forecasts are probably more of a rough guide in helping decisions around supplementary feed due to lower confidence with these forecasts. Probably not as critical as stocking rate as getting the decision wrong has less impact.
4	Sowing of pastures and crops	Yes. Decisions around cropping and sowing pastures are highly flexible and responsive to forecasts.	Yes, but again, would question the accuracy with longer-term forecasts. Short-term forecasts are important with timing of sowing, fertiliser, grazing etc and confidence is higher. Longer-term forecasts might influence the decision on whether to sow, what to sow etc, but confidence in the forecast is lower. As such, long term forecasts would be a factor in the decision, but many other factors also come into play.
5	When to irrigate	Irrigation: Sometimes Yes...If little to no winter/spring rain is expected (for recharge,) especially if water needs to be purchased No: If a heatwave suddenly comes up	Possibly...if a hot dry season is expected to follow a dry winter, than some seasonal management changes can be made
5	When to plan harvest	Maturity will occur earlier in the season with a hot/dry spring, so knowing the seasonal forecast by August can help plan harvest operations later that season.	Seasonal forecasts being released in late winter/early spring can help plan for the growing season ahead, provided they are relatively accurate (above 50%)
5	When to prune For viticulture	Yes/Possibly. If it is known that there is going to be a hot/dry growing season, pruning can be delayed or double pruning can be planned to help extend maturity timing and/or reduce vintage compression pressures.	As long as the forecast is relatively accurate. For example, if the forecasts predicts a hot/dry season and vines are double pruned and then the season is cold/wet...it would be probably mean big losses in profit and quality.
6	The area of winter crop to plant (MayJune)	Yes - it would only proceed if there is sufficient stored soilwater and reasonable outlook climatically (and the likely price).	Growers more reliant on existence of stored soilwater as the first priority. Availability of water in ringtanks would be another consideration (for irrigated crops)

6	The area of summer crop to plant (SeptOct)	Yes - the summer crop area decision is dependent on available soil water, ringtank water and likely crop price. The forecast might influence to area of irrigated vs dryland cotton grown (and associated row configurations) combined with available water supplies.	Forecasts are too broad in the summer cropping regions - growers respond with management strategies that minimise risk in relation to summer storm events.
6	From end of wet season (May), stock numbers to carrying through dry season MayDecember (beef in north Australia)	Flexibility often determined by amount pasture e.g. high pasture more flexible to hang on and use forecasts. Generally though TSDM in May determines stocking rate until Dec, so 1,3 forecasts not useful on their own, but 6 month could be useful if supported in the interim by 1, 3 forecasts (e.g. wouldn't get through if all rain fell in Nov)	Not aware of 1 and 6 mth forecasts, or their skill, but generally winter spring should be okay
7	Forecast of wet season NovMar issued in May/June	Feed budgets can be done in May/June for dry season, but stock lose weight from August, so not ideal to be selling after August. From August reliable (with consistency between) forecasts of combinations of 1, 3 ,6 mth may get through to Feb, when some rain would be expected	Current forecasts Nov-May are of limited skill west of Richmond.
7	Forecast of rain in dry season (June-Sept)	Unseasonal rain in dry season has positive outcome on beef production, so relatively low risk to hold stock (May/June) based on consistent 1,3 ,6 month forecasts of well above average rainfall June-Nov, provided good feed base to start with	Probably okay but less confidence moving west
8	Joining	Yes	not at the moment as too unreliable and forecast over too large an area to be accurate for my specific property
8	weaning	Yes	not at the moment as too unreliable and forecast over too large an area to be accurate for my specific property
8	supplementary feeding	Yes	not at the moment as too unreliable and forecast over too large an area to be accurate for my specific property
9	Rainfall and buying decisions	Yes	Currently accuracy gives a guide but is not sufficient to influence decision totally
9	Rainfall and selling decisions	Yes	Currently accuracy gives a guide but is not sufficient to influence decision totally

9	Onset of autumn break	1 or 3 months preferred	Currently accuracy gives a guide but is not sufficient to influence decision totally
10	Selecting fields for winter crop vs summer crop	Yes	Timeliness - Yes. Accuracy - No. The key drivers: IOD and ENSO are not settled for the growing season at the decision time in March/April/May. However, a strong ENSO or IOD signal can aid in decisions.
10	Timing of preplant N applications	Yes	Timeliness - Yes. Accuracy - Yes. The key drivers: IOD and ENSO are more settled for the N application decision time in June/July/August. A strong ENSO or IOD signal can aid in more confident decisions.
10	Summer crop planting opportunities in spring	Some flexibility, although planting forecasts are useful, the growing season forecasts are not there yet.	The forecasts are useful to determine planting decisions in Sept/Oct/Nov but the growing season summer cropping seasonal outlook has very low accuracy.
11	Harvesting (Wet harvest can lead to standover of crop and potential damage to soil through compaction etc. when harvesting wet blocks)	Yes. Harvesting (choosing to harvest wet or dry blocks depending on the climate forecast)	Late winter and spring provide most skill particularly when ENSO phase locks into El Nino or La Nina.
11	Irrigation (particularly in regions where only supplementary irrigation is present rather than full irrigation)	Yes. Irrigation (choosing to use or defer water use depending on forecast, and potential to purchase higher/extra water allocation when that exists - depends on region...)	Late winter and spring provide most skill particularly when ENSO phase locks into El Nino or La Nina.
11	Nutrient management (N)	Yes. Nutrient management (Matching N application and choice of N product type to seasonal outlooks)	Late winter and spring provide most skill particularly when ENSO phase locks into El Nino or La Nina.