

Monaro Seasonal Outlook (December 2013)

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Introduction

The GrassGro seasonal outlook has become a regular feature on the MFS calendar.

Projection of pasture growth and likely animal performance either good or bad are useful to the proactive management of your farm systems in order to take advantage of opportunities and limit the down side to poorer seasons.

December is the run up to weaning for most members and the performance of the weaned lambs and the recovery of ewes through to the next joining are the paramount issues. For this reason this months projections will cover a 4 month period through to the end of March just prior to the next joining in the model farm system (and most other merino flocks on the Monaro).

Significant updates in the GrassGro program this year have seen the release of version 3.3.0. I have now checked the native and improved pasture MFS farm systems which were adopted for the seasonal update process and they are generally working well, however there will no doubt be some subtle differences in the long term distributions of some measures. The relative differences will remain as relevant as ever.

Given the updates to the model I have also taken this as an opportunity to update the farm system parameters to represent animal management used to evaluate the recent wether trial and also the genotype parameters used will henceforth be those for bloodline 3 from that analysis (median bloodline performance).

Method

As usual the weather data used will be the SILO data drill for Bungarby (36°39' S : 149°00' E). The base historical simulation (starting 1 Jan 1960) is re-run up to the 30th of November 2013 to determine the current state of the system and then a tactical simulation carried out using the final state of the historical run as its starting parameters.

This simulation applies weather data for the period 1 Dec – 31 Mar for each of the years from 1960 to 2012 in order to create a distribution of possible seasonal outcomes to be compared against the historical distribution of performance.

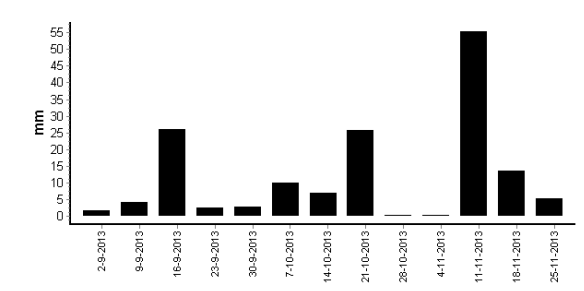
The current state of the system is compared against the historical range for the 1st of December giving a feel for the relative starting point of a range of important parameters.

Weather.

At the August update Bureau of Met. Seasonal projections were very optimistic tipping an 80% chance of exceeding median rainfall for the Aug-Oct period. The new outlook released for Sept – Nov. lowered this confidence by reverting to only a 60% chance of exceeding median.

Median rainfall for that period from the SILO weather set is 145mm. The rain received was 155mm so indeed the median rainfall was exceeded. Rainfall was reasonable with three weeks with more than 25mm and some useful smaller falls in between.

Figure 1. Weekly Rainfall totals from September to November 2013.



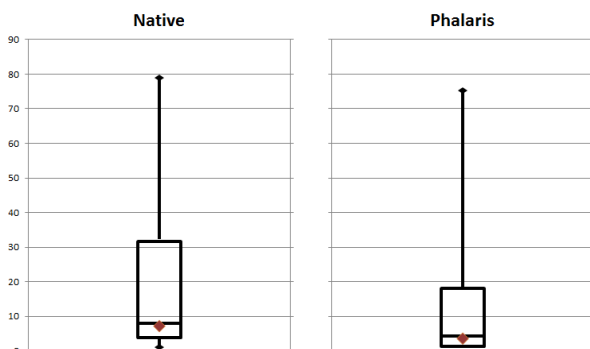
In general the temperatures early in the period were warmer than usual and temperatures later in the period cooler than usual (Table 1.). Maximums warmer than usual often lead to higher evapo-transpiration and more rapid drying of the soil profile, but also higher than average growth while soil moisture is available.

Table 1. Weekly average Max. and Min. temps.

	Max. (°C)	Min. (°C)	
1-Sep	20.5	4.43	Red shading indicates the temp. is in the highest 10% of records. Orange shading indicates temps that are between the 60th and 90th percentile. Grey shading are temps in the middle 20% of years. Light blue indicates temps. between the 10th and 40th percentiles while dark blue are temperature in the lowest 10% of records.
8-Sep	15.14	1.07	
15-Sep	13.86	4.86	
22-Sep	18.5	2.86	
29-Sep	17.93	3	
6-Oct	20.86	3.5	
13-Oct	18.64	1.29	
20-Oct	19.79	5.43	
27-Oct	19.57	4.57	
3-Nov	21.79	4.07	
10-Nov	14.57	5.43	
17-Nov	22.07	5.93	
24-Nov	19.64	5.5	

Figure 2. shows the relative plant available water for both native and improved pastures. The current state of the system is around the median for both systems however this means that the soil is fairly dry despite the good early November rainfall. The rainfall has translated into good growth but transpiration has again dried the profile. The phalaris pasture is slightly drier than the native pasture due to maintaining higher green leaf area in the preceding period

Figure 2. Plant available water (mm) on 1st Dec. relative to historical values for that day.

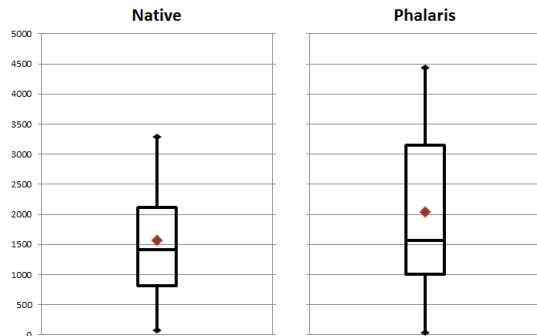


Good pasture growth has lead to accumulation of herbage and figure 3. Shows the model Indicates available herbage is above the median at the first of Dec. for bothe the improved and native pasture.

For both pasture systems the lowest historical CS is 2 since the systems are set up to feed animals to maintain them at this level when required.

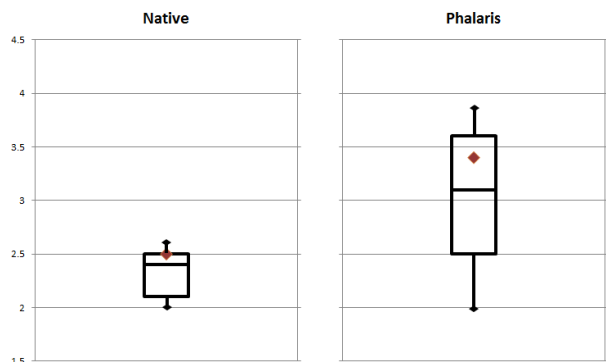
The progression of the season is often gauged by farmers in terms of their livestock. Model output for the condition score (CS) of breeding ewes on the 1st of Dec. is shown in figure 4.

Figure 3. Green herbage mass (kgDM/ha) at the 1st of December relative to the historical distribution.



In general ewe condition score lies in the third quartile although as would be expected is significantly higher on the improved pasture.

Figure 4. Ewe condition score on 1st Dec. relative to historical values for that day.

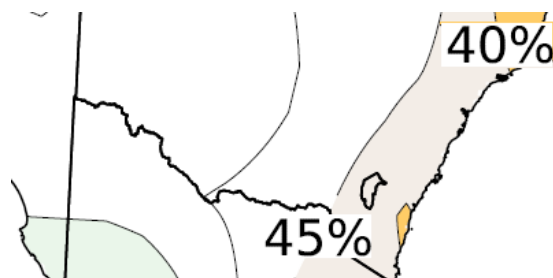


Other measures considered include the live weight of lambs at foot and the weight and condition of hogget ewe replacements. For both pasture systems the weight of lambs was around the median for the time of year at 17.6 kg on the native system and 19.7kg on the improved pasture. Of course this presumes the animals have not had any health setbacks in the lambing paddock.

Hogget ewes are predicted to be heavier and fatter than usual (90th percentile and 42kg) on the native pasture and around the median (48kg) on the improved pasture. Again this assumed that the animals have had excellent health throughout their life.

BOM weather outlook.

The three month rainfall outlook Dec-Feb is shown below. Unlike the BOM modelling available for our August update, current probabilities of exceeding median rainfall are less than 45%.

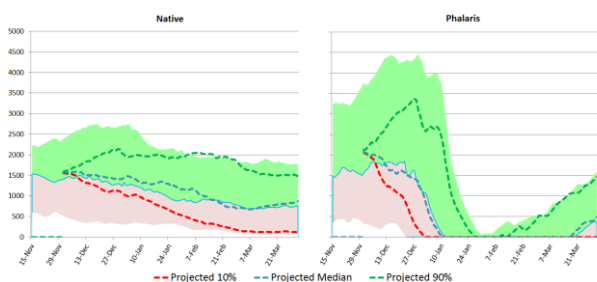


Please consider this when assessing the probability distributions shown below. GrassGro probabilities are based on an equal chance of the season being like any in the past record.

Projections 1st December – 31st March.

A tactical simulation was conducted using historical weather data for the December to March period from each year 1960 – 2012. Figure 5 indicates the projected percentile distribution for available green herbage relative to the historical percentiles.

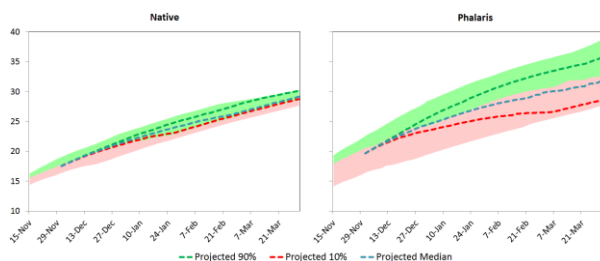
Figure 5. Projected green available herbage (kgDM/ha) relative to historical variation. Green shading is the area between the historical median and 90th percentile while light red shading is the area between the historical median and 10th percentile.



Green herbage on the 1st of Dec. starts just slightly above the median but with little soil moisture in the system Summer growth will need ongoing rainfall hence the projected percentiles track fairly close to their historical counterparts, herbage mass is very close to the long term median herbage mass throughout the period.

Lamb growth outlook (fig.6) is relatively positive. On native pasture live weights are highly likely to remain above the long term median however the 10th percentile for live weight is being propped up by supplements from early Feb. At least 200g/h/d of grain will be required in the worst 10% of years. The projections suggest however that in at least 50% of years lambs weaned onto native pastures will not require supplements.

Figure 6. Projected lamb live weight (kg) relative to historical variation.

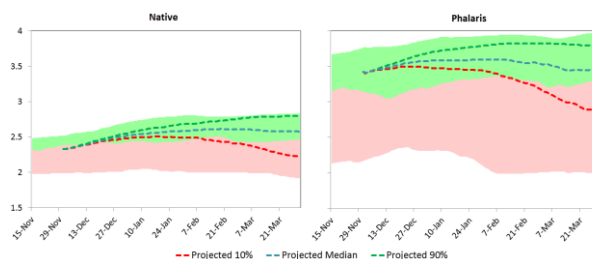


On improved pasture there is a chance of better ongoing growth and the median weight of merino weaners at the end of March is more than 30kg without the need for supplements.

Data for the replacement ewe hoggets is not shown, however on both pasture types there is a 90% chance they will be heavier than 44kg on native pastures and 47.5kg on improved pastures by the end of March.

There is some lag in mature ewe CS due to the carry over effects of good herbage availability at the commencement of the projected period. Regardless of seasonal conditions ewe CS on native pasture (fig.7) is projected to rise until about mid January. While ongoing regain of condition is likely (median) until toward the end of Feb.

Figure 7. Projected ewe condition score relative to historical variation



For the phalaris pasture the potential for a hot dry spell putting phalaris into dormancy means the 10th percentile levels off around mid Dec. and begins significant decline from the beginning of Feb. Despite this CS at the end of March remains above 3 without supplement.

Potential Strategies.

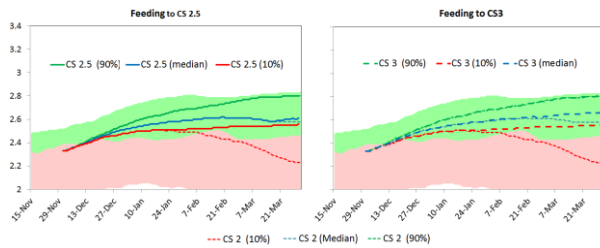
For properties with both native and improved pastures there are some obvious grazing management strategies that would prove advantageous. The most obvious is to prioritise the Phalaris for the grazing of all weaned lambs, however modelled growth rates suggest the subsequent growth of lambs coming from native pastures would be no better on the improved pastures if conditions were average to below average. Unfortunately this indicates that there should be plans in place to source suitable supplements to maintain lamb growth should they be required. There is a 10% chance lamb feeding may be necessary by mid to late January regardless of the pasture type. and a 50% chance some feeding will be required in March on native pastures.

The next most important issue is managing the condition score of ewes through to the next joining. Within a pasture type the only real option is to raise the CS threshold for maintenance feeding. The base simulations were set to feed in order to maintain animals once they had fallen to CS2. Since condition score of breeding ewes is of greatest concern for those grazing native pastures a new tactical simulation was set up to test the impact of setting feeding thresholds to 2.5 and 3 from mid Jan. onward.

Figure 8. shows that these new feeding strategies effectively truncate the 10th percentile CS to 2.5 and 3 respectively. For the CS 3 threshold level the median CS is also slightly higher by the end of March. Data from Lifetime Wool showed that the fecundity response to body condition ranges from zero to an extra 30 fetuses scanned per 100 joined ewes (30%). The economics of feeding ewes prior to joining depends on the size of this

response, the cost of grain and the value of an extra surviving lamb.

Figure 8. The impact on ewe condition score of setting higher feeding thresholds for ewes grazing native pasture.



The costs and benefits of extra feeding was calculated from GrassGro for each projected response year. Figure 9. shows the economic response surfaces for the two strategies. It was assumed that all the extra foetuses would make it

Figure 9. The economic return of setting higher feeding thresholds for ewes grazing native pasture this summer.

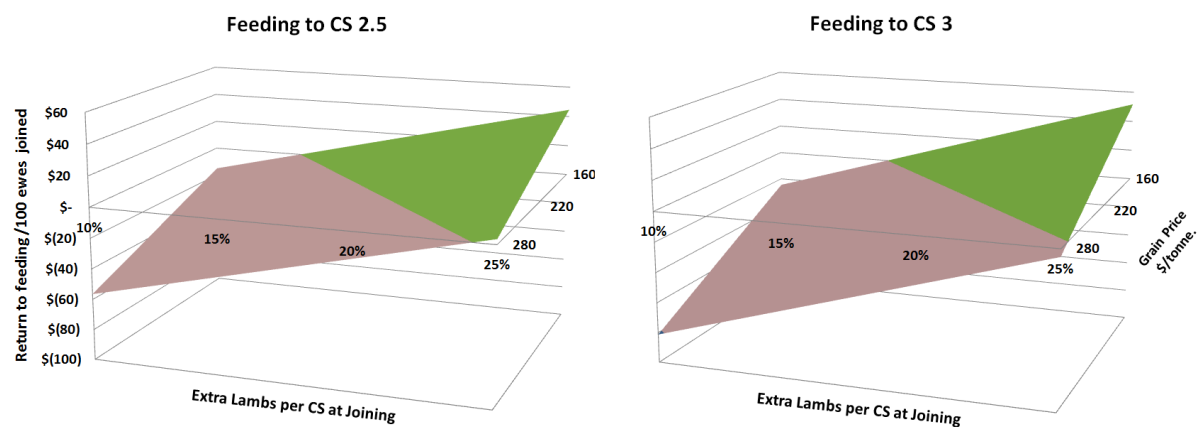
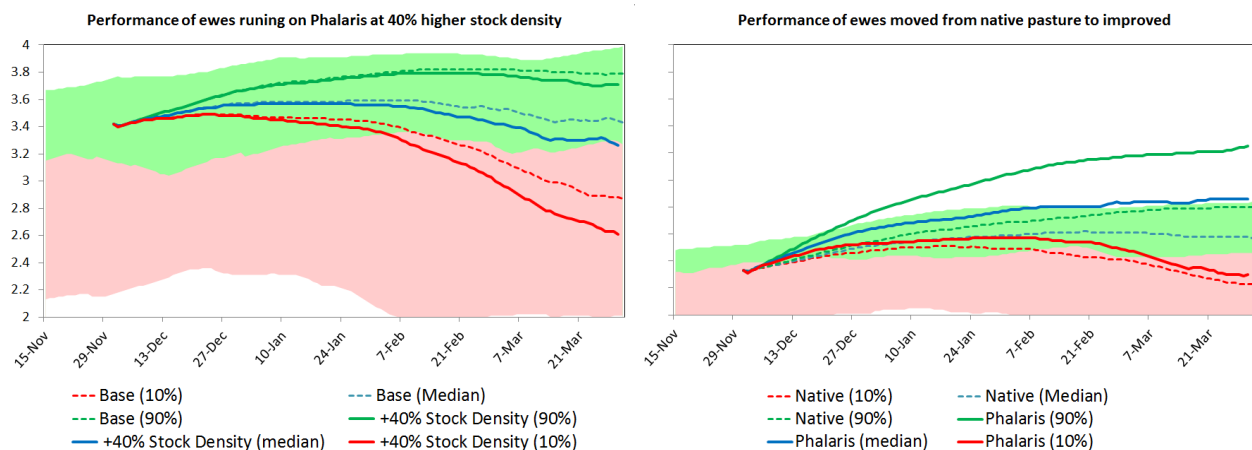


Figure 10. The impact of running ewes on phalaris at 40% higher stock density to make room to add some of the ewes from the native pasture.



For farms with a mix of native and improved pasture another option may be to run more stock on the improved pasture in order to lift the performance of at least some of the ewes that would otherwise be grazing native pasture. This means increasing the stocking density of the existing stock so it is important to ensure that this is not detrimental to their performance.

Figure 10 shows the impact of stocking the improved pasture at higher density. Increasing

to term but that the survival rate to marking of these lambs was the same as the average of all lambs born (65%). The net value of an extra lamb was set to \$70.

These graphs show the interaction between the fecundity response to joining and the price of grain. Areas shown in green are combinations that yield a profit while mauve areas yield a loss.

In general the CS 2.5 feeding target produced more combinations that yielded a profit. To yield any useful profitable response The fecundity response to CS at joining needs to be at least 15% and the price of grain needs to be less than \$220/tonne. Only around half the flocks monitored in Lifetime Wool had a fecundity response at this level or higher while the chance of procuring grain this summer at less than \$220 per tonne landed on the Monaro is probably also low.

density by 40% frees up about 30% of the area to move ewes from the native pasture.

Increasing the stocking density has a small impact on median CS and even though the impact is greater if the season is poor (10th percentile) the CS at joining will remain above 2.5 without supplements. At the same time ewes moved in from the native pasture will gain a significant boost in most years but will be about the same in the worst 10% of years. On balance this strategy should increase the average CS of the mob and

make a significant difference to the ewes that would otherwise be grazing the native pasture.

Conclusions.

Seasonal conditions for the spring period while not as good as the potential projected by the BOM in August has been close to the median which has kept quality at a higher level and stock that are otherwise healthy in better body condition.

Projections for the summer period are generally positive with even the 10th percentile projections indicating limited feeding required. Given current grain prices, setting feeding thresholds higher than the baseline strategy (maintaining a minimum of CS2) is unlikely to be economic in terms of scanning results however there may be additional benefits to lamb survival at the next lambing if a higher CS at joining translates to higher CS at other critical times throughout next years' breeding cycle.

Unlike the rosy picture painted for spring by the August 3 month outlook, BOM modelling suggests only a 40-45% chance of exceeding the median rainfall for the period so it would be wise to place more emphasis on the below median projections presented in the body of this report.

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (October 2013). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to independently check the accuracy and currency of the information.