

Climate change impacts (2030) at Holbrook

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Introduction

GrassGro simulated pasture production for the grazing land about 15 km east of Holbrook. The pasture of phalaris, ryegrass and sub clover is typical of this area. The 2030 projections for four models (GCM's) were compared to the base period (1970 – 2000)

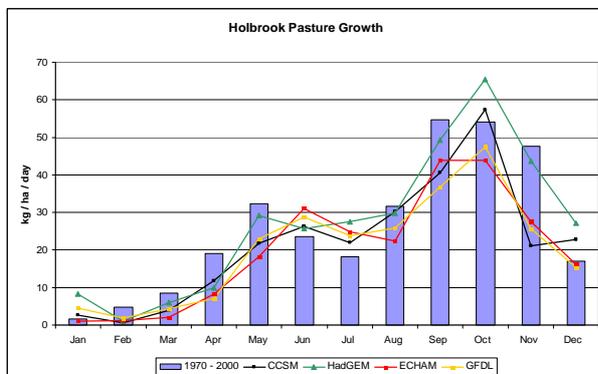
Average total annual pasture growth kg DM/ha

Three of the models show lower pasture growth, with one model showing more total pasture. The average across the 4 models is 9124 kg or 97% of base production.

Base	Model 1	Model 2	Model 3	Model 4
	CCSM 3.0	HadGEM1	ECHAM5-OM	GFDL 2.1
9451	9218	10800	7758	8721

Monthly growth

Monthly growth reflects the predicted changes in rainfall and temperature and the growing season, and may be of more use than yearly totals. The models vary in their monthly growth predictions but there is a trend for more pasture growth in winter (June and July), and less total spring growth. All models suggest less autumn growth. It may be harder to maintain ground cover in late summer and autumn.



The growth rates shown have included the positive impacts of increased carbon dioxide on plant growth.

Stocking Rates

The stocking rates for all years are set so that pasture ground cover is maintained above a minimum of 65% for 7 in 10 years. Only one model predicts historic stocking rates can be maintained. Three models predict they will be lower.

Base	Model 1	Model 2	Model 3	Model 4
	CCSM 3.0	HadGEM1	ECHAM5-OM	GFDL 2.1
14	11.2	14	8.4	9.8
dse/ha	dse/ha	dse/ha	dse/ha	dse/ha

The average stocking rate over the 4 models is 10.9 dse/ha or 78% of the base.

Profit per hectare

For the Holbrook district a spring calving, self replacing British breed herd supplying feeder steers at about 17 months of age was modeled. Profit was determined which included \$100/ha for overhead costs. The stocking rates above were used. Profit is shown in dollars per hectare.

Base	Model 1	Model 2	Model 3	Model 4
	CCSM 3.0	HadGEM1	ECHAM5-OM	GFDL 2.1
\$117	\$61	\$109	-\$1	\$33

The models show a decrease in profit to an average of \$51/ha or 44% of the base profit. However the above table shows a large range in change in profits across the four models.

This provides us with an indication of the potential impact on profits of the climate in 2030 where no changes have been made to the production systems.

However as the climate changes producers will adapt to these production changes and lessen the impact on profits. Other fact sheets in this series will describe modeled adaptation changes in production, indicating the relative change of different strategies.

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