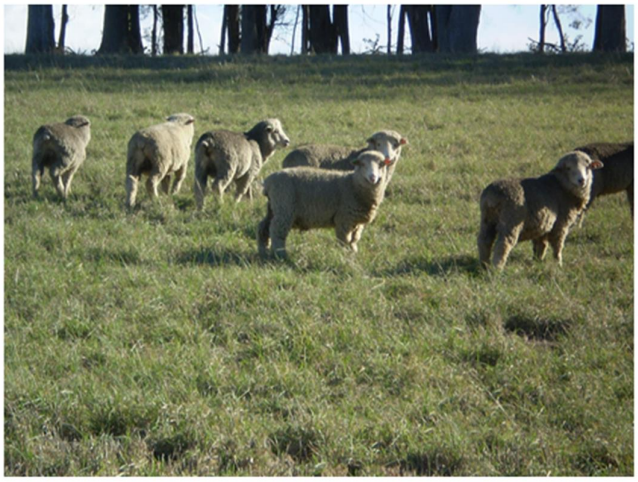
Background

Exceltas (Coloured Brome) is a strongly perennial grass originating in the warm temperate areas of the Andes Mountains (Argentina and Chile). It is recognised as a very valuable component of the native pastures, but with the introduction of European ruminants and 150 years of essentially uncontrolled grazing, the species is now quite rare. It has been somewhat neglected by the plant genetic resources community and very few accessions have been collected, even fewer given a preliminary agronomic evaluation.

As part of the Tasmanian Pasture Plant Development Program a small number of accessions were introduced via the USDA in 1992. These were incorporated into a broad scale evaluation process across the state. One accession was quickly identified as promising, but somewhat variable, and a further selection was made resulting in the cultivar Exceltas.



Longevity *"The true long-lived perennial brome"*

Exceltas was tested widely across Tasmania with the initial emphasis being placed on establishing its tolerance to both cold, and low rainfall, in the Midlands. The key site was Jericho (AAR 480mm) and although some of the original plants are still surviving after 14 years the cultivar was not as productive as other species, e.g. Uplands Hispanica Cocksfoot. However, it soon became apparent that Exceltas was best adapted to areas that had in excess of 600mm AAR and those that had some summer rainfall influence. It is worth noting that the original breeder's plot of Exceltas is now coming into its tenth year and is still just as dense as year 1.

Yield *"Breaks through the ryegrass yield barrier"*

In 1998 a number of cultivars (cocksfoot, ryegrass and brome) were evaluated at the Elliot Dairy Research Station (900mm AAR), and after 3 years Exceltas had out yielded all the high performance perennial ryegrass cultivars (e.g. Bronsyn). See Figure 1.

OF EXCELTAS® COLOURED BROME

Elliott Research Station 2004/05

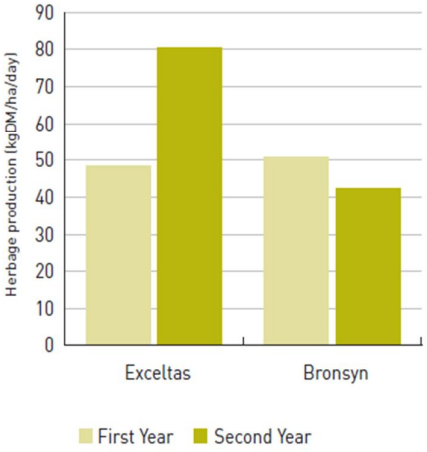
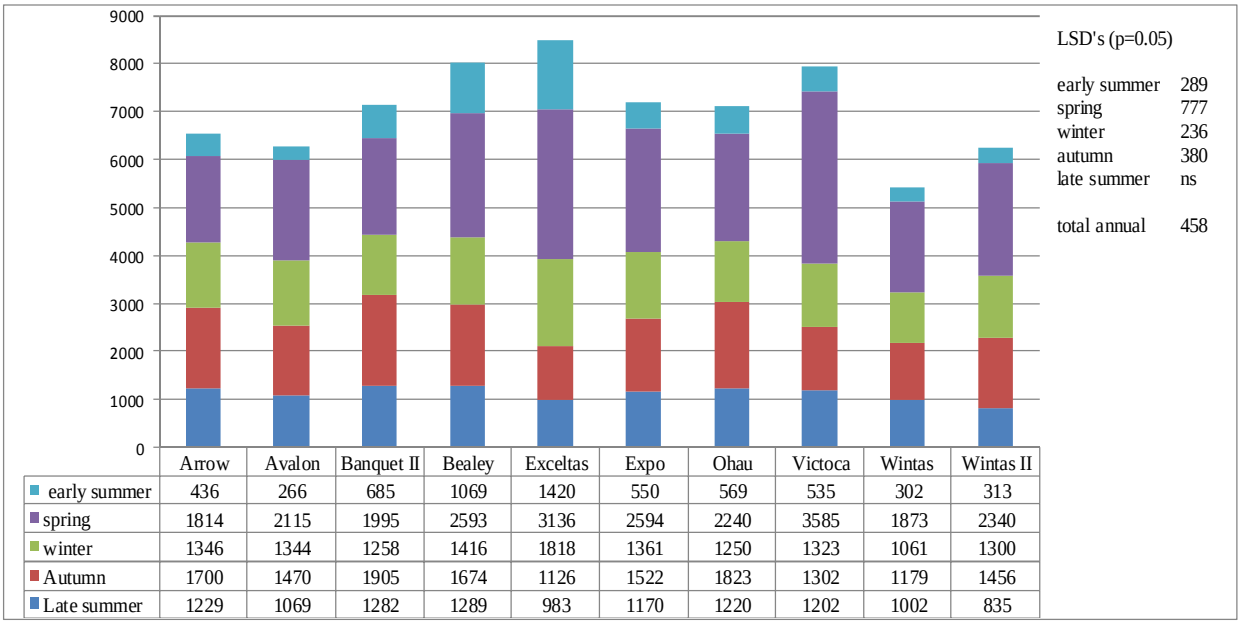


Figure 1

Exceltas has continued to produce high DM yields throughout those areas of Tasmania where it is adapted. It has also been entered onto the NSW list (This latter work being done by Belinda Hackney, NSW DPI).

In 2010 the Tasmanian Institute of Agriculture (TIA) began a multi species/cultivar trial on the Cressy Research Station (680 AAR), and after 2 years Exceltas has out yielded all other cultivars (See Table 2). This trial is expected to run for another 2 years.



	Arrow	Avalon	Banquet II	Bealey	Exceltas	Expo	Ohau	Victoca	Wintas	Wintas II
early summer	436	266	685	1069	1420	550	569	535	302	313
spring	1814	2115	1995	2593	3136	2594	2240	3585	1873	2340
winter	1346	1344	1258	1416	1818	1361	1250	1323	1061	1300
Autumn	1700	1470	1905	1674	1126	1522	1823	1302	1179	1456
Late summer	1229	1069	1282	1289	983	1170	1220	1202	1002	835

Table 2

t feeding grubs"

Exceltas has a very deep rooting habit and a very large root mass which greatly reduces the effect of root feeding grubs.

Grows all year round

Exceltas has the ability to grow at any time of the year when moisture is not limiting. Its big feature is its ability to respond to summer rain and it grows at warmer temperatures than perennial ryegrass. It is suitable for irrigated systems

Deferred grazing

Exceltas remains palatable even when seeding and can be closed up in the spring and fed out over summer.

Maintains good clover content

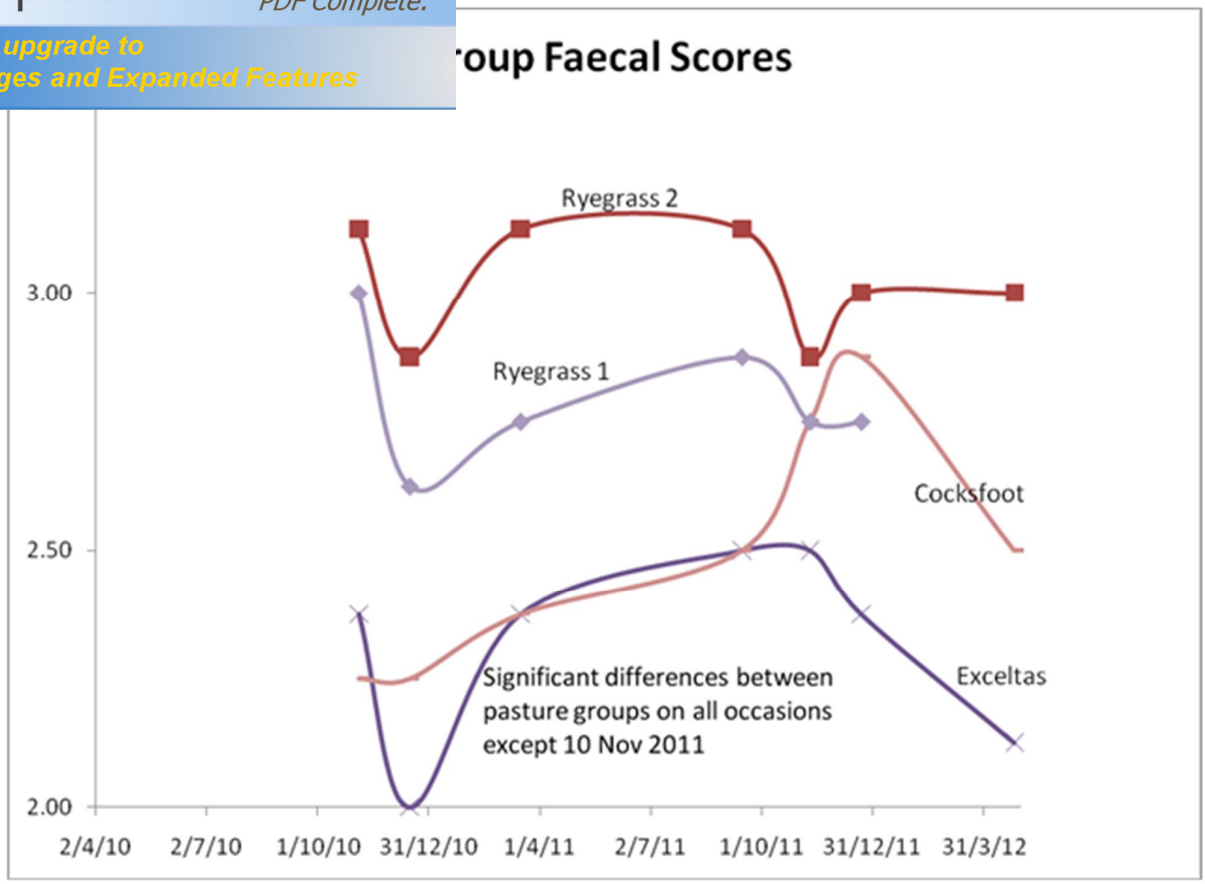
In trials across Tasmania Exceltas has proved to be ideally suited for planting with Astred and Rubitas Stoloniferous Red Clover and KI Creeper Grazing Lucerne. Sowing Rate 15 ï 25kg/ha either Autumn or Spring

Animal Health *"No endophyte, no staggers, no dags"*

Exceltas has no animal health issues and is readily eaten by all classes of livestock. It contains no problematic endophytes and staggers are not an issue.

In early March 2010 TIA began a trial, on the Cressy Research Station, to evaluate a range of grasses in relation to lamb production. The aim of the research is to quantify the performance of new pasture species and cultivars developed within TIA relative to species and cultivars typically used by Tasmanian producers such as Porto cocksfoot, Tall fescue, Phalaris and Perennial Ryegrass. The details of the aims and methodology of the trial can be found at: http://www.tia.tas.edu.au/extensive/sheepconnect/pastures/burlington-grazing-trial

Of particular interest to the ćase for Exceltasôis the fact that very early in the progress of the trial it was noticed that the lambs grazing Exceltas always had a firm faecal pellet and did not develop lots of dags. The measurement of this phenomenon was then included in the regular monitoring of the lambs.



Ryegrass 2 = tetraploid, Ryegrass 1 = diploid, cocksfoot = Porto

The above figure shows the average of the four faecal scores over the four weeks on each plot.

Faecal Score

Faecal consistency scores are a measure of how dry (score 1) or runny (score 5) the faeces are. This was measured by examining faeces left by the group of sheep after being held for about 20 minutes before weighing on each occasion when they were moved between paddocks. So this score was taken four times, each time being after one week on each plot. However, individual sheep differences are not measured, since it is a score for the whole group. The dag score can vary depending on the length of wool at the time, so this may be a more consistent measure of **'tendency to form dags'.**

Dag Score

Dag scores were measured before the sheep went onto the first plot and on the day they came off the last plot. It was not measured at intermediate times when moving from one plot to another. The final dag scores give similar results to faecal consistency but are statistically less significant because it does not take into account differences between individual sheep.

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sistency are most often assumed to be due to internal parasites although other causes are possible. The sheep were run as a single large mob before going onto the plots so they should have been evenly infected before the start of each trial. However, differences between plots are possible, since other sheep graze on these plots between trial periods and the number of sheep used depends on pasture growth. Therefore the effects observed could be due to differences in the number of parasites on the pasture before each trial begins. Although four plots are used these are not valid replicates for the purposes of considering internal parasites, because these could be transferred from plot to plot as the sheep move each week.

At the end of the April 2012 cycle the sheep on Ryegrass 2 (Tetraploid) had an average faecal egg count of 600. All others had results around 100-200. Therefore the high faecal scores for Ryegrass 2 may be due to the high parasites in this group. It is not clear yet whether the pasture has a higher level of larvae or whether that pasture allows the parasites to reproduce more easily in the sheep. The consistently low results by Exceltas cannot be explained by differences in parasites, since this group was the same as all the others in faecal egg count.

It is planned that more rigorous monitoring of faecal consistency and dagging is undertaken to quantify if the trend is a pasture/nutrition issue. In other words, further work is needed to confirm the validity of the trend, and if it is valid, the mechanisms or causes quantified.

Significance

Flystrike is a major problem for sheep in the Australian wool industry, and it is estimated that around 3 million sheep die as a result. Many more are affected by non-fatal strikes. This results in the need to crutch sheep, treat with insecticides, or in many cases for lambs to undergo a mulesing operation. Besides all of these actions being costly and on-going, mulesing is likely to be phased out in the near future. Since 2004 industry and government funding has been significantly increased to find alternate methods to reduce flystrike incidence (other than via mulesing.) Several methods are being trialled including the application of clips which stretch the skin and ultimately atrophy and thus remove the excess wrinkled skin, chemical compounds injected beneath the skin of the buttocks to have the excess wrinkles slough off, and projects to select and breed sheep with bare (wool-less) breach areas. To date no ósilver bulletô is likely to be forthcoming.

Having a pasture grass that not only has excellent agronomic attributes but also has the ability to reduce ówetôfaeces must offer a serious management tool to the sheep industry. It is not claimed however that Exceltas will totally solve the problem as there are many areas where it will not grow e.g. areas with less than 600mm AAR, and those water logged soils more suited to Tall Fescue. Nevertheless there are significant areas suited to growing Exceltas, more or less in an arc from Mt Gambier in South Australia to Armidale in NSW and in most of New Zealand.