Pastures from Space & Precision Sheep Production

Contents:

Comments on the break

2003 is shaping as yet another very challenging year for the project - Stewart Gittins and Murray Ellis have just returned from Richard & Debbie Coole's home farm just north of Franklin where there was > 2000 kg of FOO in one paddock on the western side of the farm and no germination yet in some paddocks on the eastern side of the same farm!!!

Famous words from Chris Oldham and according to Stewart the same could be said of many properties from Dandaragan to Frankland.

The very early rains in mid April led to a few false breaks, with all the usual complications such as only the capeweed and grassy rubbish survive while clover plants try as hard as possible to impersonate new born lambs (a walking death wish) but in other places pasture hanged on until follow up rain in mid May, which has made a few very happy people.

Maybe we can organise an agistment website for those still waiting for decent rains

FOO Calculations

In the first newsletter I briefly mentioned that we are using 4 methods for calculating FOO, which are based on ground measurements obtained from specific properties in each zone.

Feedback seems to be that some of you are keen to get a bit more in depth on the how and when, so I'll have a go without putting at risk too much intellectual property.

Grouping of farms:
Across all regions we have had to rationalize the number of ground measurements taken due to the shortage of hands and days of the week. What this means is that for some collaborators their FOO calculations will be based on measurements taken from their neighbour's property. Unlike last year, these groupings or FOO zones are much more tightly grouped and based on similarities in growing conditions, not just distance (see figure 2 in NL1 and figure ?? here). Groupings are likely to include up to 4 properties with only one or two exemptions where there are more.

Collecting the data:
For each FOO zone data will be collected from one property, selected because of centrality, features of interest, ease of access and or enthusiasm and participation. (Nothing to do with the number of muffins offered to the sampling team).

The sample paddocks are initially identified in consultation with the owner to represent proportional distribution of soil types. The aim is to select an area of low FOO and High FOO to relate to the NDVI pixel in the satellite image from which we generate the FOO map. High and Low FOO don't necessarily have to come from the same paddock.

To minimize the amount of time spent running around the paddock choosing the right spot (uniformity of measurement), we preselect positions by using an image from the MODIS satellite 3-7days prior to visiting the farms. Colour printouts of these images with farm maps are sent to the field operators so that they can drive directly to a position in the paddock, confirm (or not) our selection and then proceed to take the measurements.

Remember that Modis has a 250m pixel so it is only an approximation. The ground measurements will be related to a Landsat or SPOT image with 30m pixels.

The operator selects an area which is 3x3 pixels and visually assesses biomass every 5m in an M pattern so that the final value used is the mean of about 60 readings.

A GPS position is taken from the centre of the middle pixel and together with the mean and

standard deviation of the 60 readings is submitted for FOO calculations. Of course all this is repeated about 28 times each month between Dongara and Frankland.

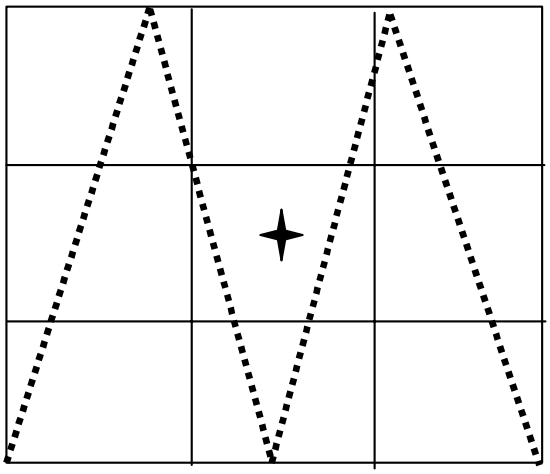

Figure 1 Sampling pattern for visual foo measurements with GPS measurement in centre pixel

These visual measurements are also calibrated once per month. The field operator will do a series of visual estimates followed by cutting samples to ground level, drying the pasture in ovens overnight and weighing the dry matter. Weights are then plotted against the visual estimates and a calibration equation generated.

Calculations and QC:
Back in Perth, the satellite image is obtained, georeferenced and processed to calculate NDVI. From the NDVI and high and low FOO values the FOO maps are generated. Remember that at present we are testing 4 ways of calculating FOO, so 4 maps are generated for each grouping of farms. When all maps are available, Stewart Gittins, who coordinates all the field operators will review all 4 maps for each grouping to select the one that best describes paddock conditions. This may also involve phone linkups to district offies to check with some of the other field operators.

The chosen map will then be reworked into a higher quality image and cut out to create the individual emails and for posting on the web.

Further corrections or modifications to the calculations may follow depending on the feedback from producers before a group meeting takes place.
And then we start all over again!

2003 Satellite dates

In the tables below we have listed the dates when the Landsat TM7 Satellite is scheduled to fly over the different regions.

While Landsat is not the only satellite we use, it is our first choice and all activities are planned around it

If nothing else, these dates will give you an indication of when you are likely to see the field team feverishly walking up and down your favourite paddock (looking puzzled while trying to read little coloured maps, so be kind to them).

DATE OF PASS	DAY 0	OLD ZONE
19-May-03	MON	1&2
4-Jun-03	WED	1&2
20-Jun-03	FRI	1&2
6-Jul-03	SUN	1&2
22-Jul-03	TUE	1&2
7-Aug-03	THU	1&2
23-Aug-03	SAT	1&2
8-Sep-03	MON	1&2
24-Sep-03	WED	1&2
10-Oct-03	FRI	1&2
26-Oct-03	SUN	1&2
11-Nov-03	TUE	1&2

DATE OF PASS	DAY 0	OLD ZONE
12-May-03	MON	3,4,8,9&10
28-May-03	WED	3,4,8,9&10
13-Jun-03	FRI	3,4,8,9&10
29-Jun-03	SUN	3,4,8,9&10
15-Jul-03	TUE	3,4,8,9&10
31-Jul-03	THU	3,4,8,9&10
16-Aug-03	SAT	3,4,8,9&10
1-Sep-03	MON	3,4,8,9&10
17-Sep-03	WED	3,4,8,9&10
3-Oct-03	FRI	3,4,8,9&10
19-Oct-03	SUN	3,4,8,9&10
4-Nov-03	TUE	3,4,8,9&10

DATE OF PASS	DAY 0	OLD ZONE
5-May-03	MON	5&6
21-May-03	WED	5&6
6-Jun-03	FRI	5&6
22-Jun-03	SUN	5&6
8-Jul-03	TUE	5&6
24-Jul-03	THU	5&6
9-Aug-03	SAT	5&6
25-Aug-03	MON	5&6
10-Sep-03	WED	5&6
26-Sep-03	FRI	5&6
12-Oct-03	SUN	5&6
28-Oct-03	TUE	5&6
13-Nov-03	THU	5&6

2003 meetings:

The next meeting for the Darkan group will be held on Wednesday 18th June between 9:30 and 12:00 noon at Roclea South's shearing shed.

The meetings for the Kojonup groups will be done over two sessions. On Wednesday 18th June the group coordinated by DAWA will meet in Roger House's Shearing shed between 2.00 and 5.00 pm. For these two meetings Rodger Bryant has already sent out an email notice.

On Thursday 19th June the PIRD group will meet also in Roger's shearing shed between 9:30am and 12: 00 noon.

The agenda for all meetings has not been finalised but is likely to include:

- Discussion of the data provided from the first satellite image obtained on May28.
- Release to producers of the Pasture Watch program and running demonstration.
- Others bits and pieces including setting a date for the next meeting

As a reminder, the purpose of these meetings is:

- Share feedback on the delivery of FOO and PGR data. Discuss technical problems.
- Utilization of FOO and PGR information, including PAM, Pasture Watch and feed budget calculator.
- Visit a selection of paddocks where ground truthing is being carried out
- Present ongoing results from the lifetime Wool production project.
- Discuss any other activities participants may suggest in relation to Pastures from Space

FOO and PGR presentations to the Grassland Society of VIC and NSW

Following Dave Henry's technical presentation to the last biennial meeting of the NSW Grasslands Society roughly 12 months ago, the organizers of the next joint NSW & Vic Grasslands Societies (expectation is around 700 farmers in Albury on June 12-13) decided to dedicate a whole session to all things remote sensing. As part of this approach they asked Roger House (contacted because of his staring role in previous publications at Australian Society of Animal Production Conference 2002 and in 'Farming Ahead') if he was prepared to present a paper on 'Pastures from Space' from the cockies point of view.

Roger showing great fortitude not only agreed but suggested that the Department of Agriculture be invited to comment on the 'Value Proposition' as we have been attempting to define it over the last couple of years with a lot of help from you our valued cooperators. This paper highlights the recent case study presented by Brad Wooldridge in March 2003 and the proposition that Richard Coole prepared for his presentation to the old AWI Board last year.

Both these papers should be available in electronic form (Word or PDF) after they are presented at the conference. That way we make sure we get the final version!!

Pasture Watch – its here!

The Pasture Watch program will be distributed over the next two weeks as groups from WADA and CSIRO meet with collaborating groups.

Initial impression is that it looks good and is easy to drive. I am sure over the first few months as people use it there will be lots of suggestions on options they want included. I guess it will be an interactive process with some negotiations in the middle with Fairport to include additional options if warranted

More details coming soon but don't miss the next meeting to make sure you get your copy!!!

FOO zones

The latest arrangement of properties and sampling sites is shown in the following series of images going from North to South.

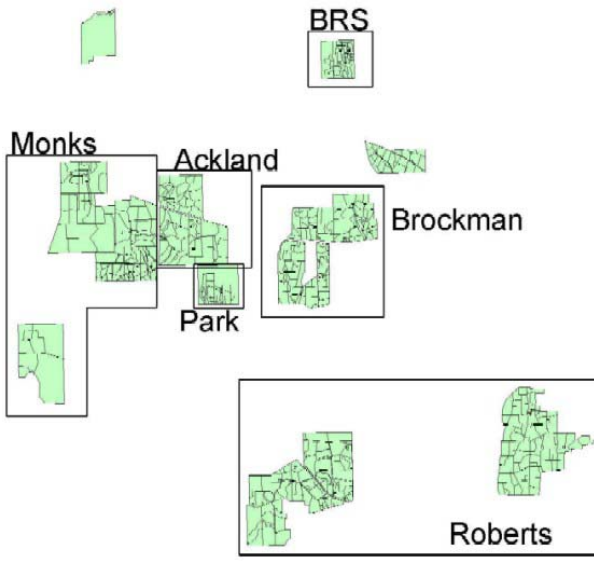

Figure 1 Dandaragan

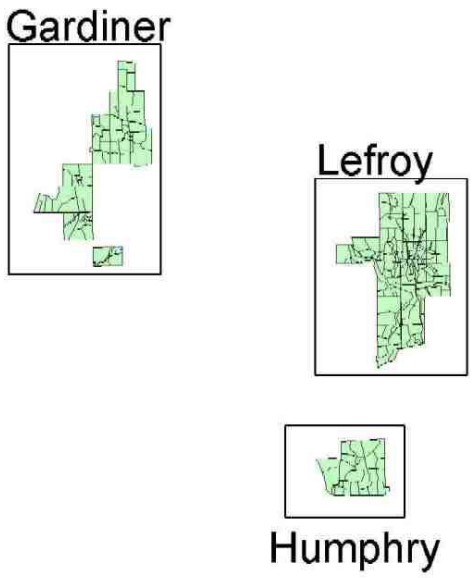

Figure 2 Moora

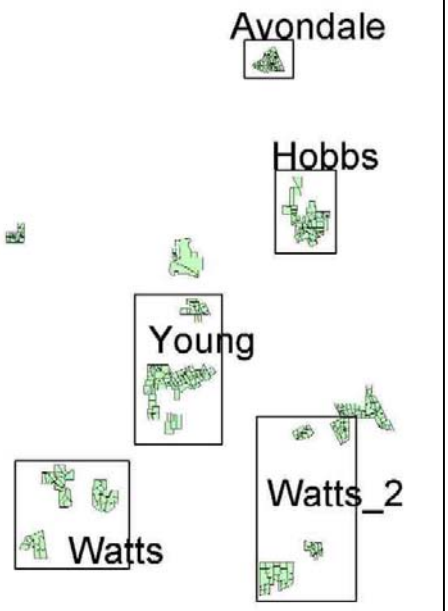

Figure 3 Brookton

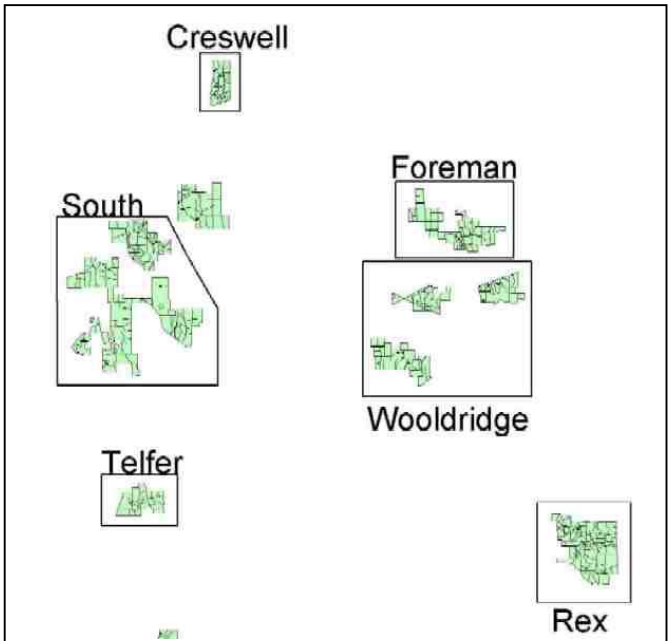

Figure 4 Darkan

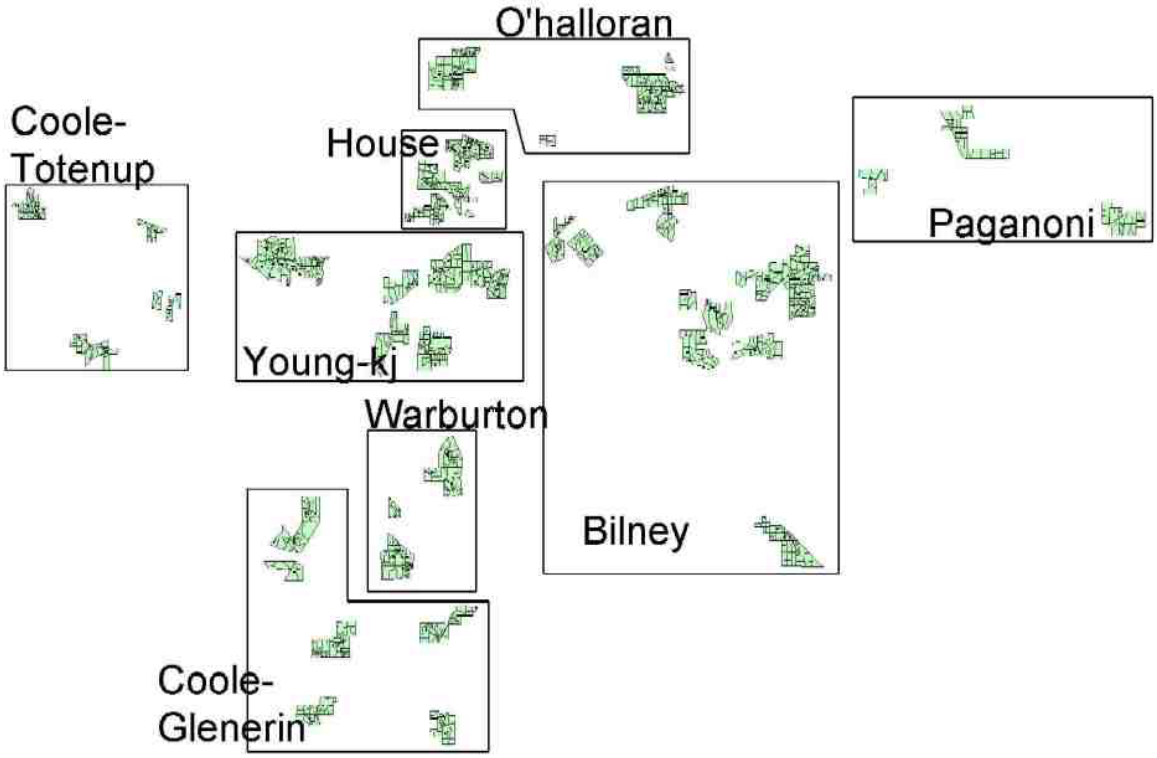

Figure 5 Kojonup

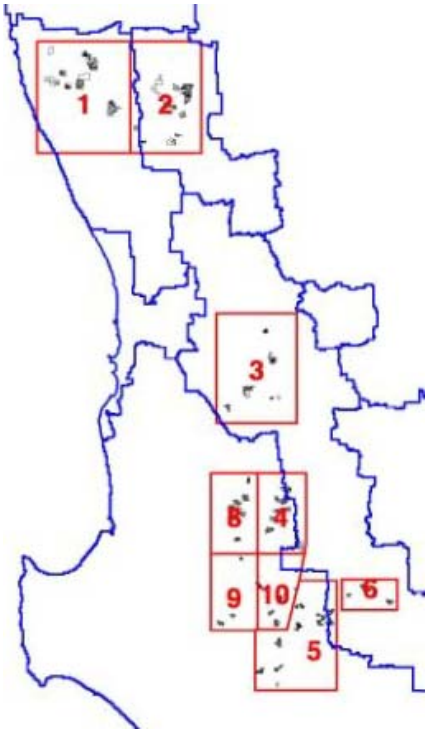

Figure 6 FOO zones for 2002