Agenda Day 1

08.30  Set-up workstations
09.00  Welcome and introduction; Partnering for reviews – the trusted (Colleague 1) and distant reviewers (Colleague 2) (Chris B)
10.00  Morning coffee/tea
10.15  Concept planning and the original contribution (Chris B)
10.45  Individual work on Concept Plan
11.30  Review of Concept Plan with Colleague 1
11.45  Revision of Concept Plan
12.30  Lunch
13.15  Reference manager software (Rob S)
14.15  Criteria for selecting your Target journal (Rob S)
14.45  Individual work on Target journals
15.15  Afternoon coffee/tea
15.30  Outlines (Chris B)
15.45  Individual work on Outlines
16.45  Review of Outline/Target journal selection by Colleague 1 using five Critical questions
17.15  Appraisal and feedback for Day 1
17.30  The BecA-ILRI Hub (Rob S)
18.00  Finish and Welcome Reception at ILRI
What is this course about?

- Hands-on course
- New skills to improve writing efficiency
- Provides experience to transfer to your working groups
- Creates time to produce an advanced draft
- Vehicle for improving the institute’s working environment
- Provides guiding principles for writing papers

However you should still maintain ownership of your own writing style.
Why is paper writing important?

- Rewarding in its own right
- Contributes to global, regional and local knowledge
- Means of recognition
- Stimulates knowledge of the literature
- Offsets underinvestment of time in reading and thinking
What needs to happen?

- Please be punctual
- Focused sessions (avoid multi-tasking, divert phone, turn off other computer applications)
- Quiet space (no discussion i.e. all discussion outside)
- Back-up your work on thumb drive

..... however the distribution of writing expertise and pace is inevitably variable so......
Behaviours

- Respectful
- Critical
- Supportive
Trusted and distant reviewers

- Idea of writing buddy
- Getting papers written quickly
- Benefits of continuous review
- Wise heads
- Do not hesitate to consult
- Name in each column once
Concept planning and the original contribution

- One contribution = one paper
- Avoid multiple minor contributions
- Identify the primary/main contribution in this particular paper and document material for other papers
- Multi-part papers are complex – consult with the journal editor before committing

- Concept planning is crucial
- Use several versions/drafts
- Often it is best to do this by hand and
- Orally with Colleague 1
Sample Template for Concept Mapping of Journal Paper

The journal paper will be written around the “key contribution” – the concept map provides an overview of the narrative that will be developed in the paper; review & revise this as many times as necessary until the narrative is really clear.
TARGET JOURNAL I

Who is your **readership**? Make some notes and critically evaluate.

What is your **aim**? To get your readers to use the contents of your paper for:
- Decision making
- Designing their own experiments
- Citation in their own research

Make a short list of **journals** and check their Impact Factor:
- Medicine has high level of networking, so high impact (e.g. New England Journal of Medicine = 45)
- Social Science has low level of networking, so low impact
- Work out impact threshold you want to achieve
Are your competitors publishing in these journals?
- Engage with your competitors e.g. nominate as reviewers
- Once selected get the style guide and template from the journal’s homepage and use it in this workshop

What **type of paper** is it?
- Original article
- Review paper
- Commentary
- Short communication or ‘Technical Note’
- If in doubt consult early with colleagues or the journal editor
Selecting your journal: what audience do you want to reach?
An example

Core result: The exotic tick *R. (Boophilus) microplus* has displaced the endemic tick *R. (Boophilus) decoloratus* over much of East Africa over the last two decades. It is likely to bring increased threats of disease transmission and pesticide resistance.

**International ecology / disease journal**
An example of the displacement of an endemic by an exotic species with implications for disease control.

**An (African) public policy journal**
A new and possibly very damaging threat that will require policy action.

**A journal on African livestock production**
An emerging disease threat that farmers need to know about.

For each of these options both the writing and supporting information will be different. Your success depends on recognising this.
Outlines

An outline will be between 3 and 6 pages (no Figures/Tables yet)
- Use the outlining tool in MS Word (or similar) OR
- EndNote/Tools/Manuscript templates
- Set out the sections
- Fill in the sub-headings

Content of each sub-heading as 2-to-5 dot points
- e.g. 1. “a paragraph on who has used what methods of analyses; come up with particular findings, in the last five years. Emphasise major groups.
- Include important references (e.g. major review) and other prompts (e.g. reminders for Acknowledgments)
- This is an opportunity to get the logic of the paper right
- Getting the logic right at the start avoids multiple versions
Outlines – an example of first level headers

- Abstract (Summary)
- Introduction (Background)
- Methodology
- Results
- Discussion
- Conclusion
- Acknowledgments
- References
- Tables
- Figures

Specific outline & headers actually depend on the ‘type of paper’ and nature of the work
Example outline for Background/Introduction

Start with a grabbing statement about how this area is rich with observations but difficult to make predictions in

**Scope**
- Define the scope of your paper

**Previous studies**
- Briefly review the main studies to date. Refer to specific important review paper (name reference). Mention specific studies that need to be included (name references to be used).

**Existing relationships/findings/uncertainties**
- Debate particular issues and define all terms

**Statement of contribution of this paper**
- This paper proposes a new relationship, tests the following hypotheses, examines……….., context of discussion
Critical Questions:

1. Is the paper a self-contained narrative? (a story with the appropriate level of complexity)

2. Does the paper build on previous key work?

3. Have the current trends in this field been identified and contrasted?

4. Is the original contribution clear?

5. Are the target journal and paper type e.g. original research paper, review, short communication good choices?
## Agenda Day 2

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>08.00</td>
<td>Update Concept Plan, Revision of Outline</td>
</tr>
<tr>
<td>09.15</td>
<td>Figures, Tables &amp; Captions – their design to enhance the narrative (Peter W)</td>
</tr>
<tr>
<td>10.00</td>
<td>Ethiopian coffee ceremony</td>
</tr>
<tr>
<td>10.30</td>
<td>Individual work on Figures, Tables &amp; Captions</td>
</tr>
<tr>
<td>12.30</td>
<td>Lunch</td>
</tr>
<tr>
<td>13.15</td>
<td>Review of Figures/Captions by Colleague 1</td>
</tr>
<tr>
<td>13.45</td>
<td>Revision of Figures/Captions</td>
</tr>
<tr>
<td>14.15</td>
<td>Introduction and Conclusions (Peter W)</td>
</tr>
<tr>
<td>14.45</td>
<td>Individual work on Introduction and Conclusion</td>
</tr>
<tr>
<td>15.15</td>
<td>Afternoon coffee/tea</td>
</tr>
<tr>
<td>15.30</td>
<td>Individual work on Introduction and Conclusion</td>
</tr>
<tr>
<td>16.45</td>
<td>Review of Introduction and Conclusion by Colleague 1</td>
</tr>
<tr>
<td>17.15</td>
<td>Appraisal and Feedback for Day 2</td>
</tr>
<tr>
<td>17.30</td>
<td>Finish</td>
</tr>
</tbody>
</table>
Figures, tables and captions

1. Simple and structured; follow the journal format

2. Reduce the number of Figures and Tables if possible, or move extras to Appendices or Data Repositories

3. Innovative Figures are welcome but they must be readily understood (or sufficiently explained)

4. Captions and Legends must be clear; reader must understand content. Use keys within Figure if advantageous.

5. If you are to use colour, check with the journal first

6. Ensure the essentials are in place (north arrow and scale on maps, units on axes)
# When to use Figures and Tables

<table>
<thead>
<tr>
<th></th>
<th>Table</th>
<th>Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Most useful</strong></td>
<td>Number</td>
<td>Shape</td>
</tr>
<tr>
<td><strong>When working with</strong></td>
<td>Individual data</td>
<td>Overall pattern</td>
</tr>
<tr>
<td><strong>When accuracy/precision</strong></td>
<td>More important</td>
<td>Less important</td>
</tr>
</tbody>
</table>
Artwork
- Often journal specific
- Refer to journal style sheet
- Colour can be expensive; convert to grey-scale

Editing
- Do the figures match the legends?
- Are the axis labels properly explained in the legend?
- For reduction in publication:
  - what reduction is appropriate for figure?
  - does it fit column width of journal?
- Use keys within Figure if advantageous
- Add a), b) etc if using multiple Figures
FIGURE 1. The orbital and size distribution of the observed Baptistina asteroid family.

From the following article:
An asteroid breakup 160 Myr ago as the probable source of the K/T impactor
The family has been projected onto a plane of proper semimajor axis $a$ versus absolute magnitude $H$. On the right ordinate, we show asteroid diameters for a typical C-type asteroid albedo of 0.04. The central and largest body of the family, C-type asteroid (298) Baptistina, has proper semimajor axis $a = 2.264$ au, eccentricity $e = 0.15$, and sine of inclination $\sin i = 0.10$ (ref. 18). The BAF was identified using the hierarchical clustering method (HCM) applied to the proper orbital element database found in the AstDyS database (see Supplementary Discussion). The HCM locates bodies in the neighbourhood of (298) Baptistina with mutual velocities less than a threshold limit $V_{\text{cutoff}}$. The filled and open circles show 3,042 linked objects with $V_{\text{cutoff}} = 53$ m s$^{-1}$. The family is also noticeably depleted near the adjacent J7:2 and M5:9 resonances (grey bar at $a = 2.2545$ au). The two-lobed structure with an evacuated centre is diagnostic of families that have spread in $a$ for an extended time under the influence of Yarkovsky/YORP thermal forces. The dark grey lines that bracket the outside of each lobe represent our best estimate of how far the majority of family members could have spread in 160 Myr. Objects outside these curves, shown as open circles, are assumed to be predominantly interlopers. Most come from the nearby Flora or Vesta families, whose spectroscopic signatures are similar to space-weathered ordinary chondrites (that is, S-type asteroids; Flora family) or basaltic achondrites (HED) meteorites (that is, V-type asteroids; Vesta family). Their number density near a $H$ of 16, at which the SDSS is sensitive to asteroids, indicates that interlopers between the grey curves only contribute 10–20% to the overall BAF.
**Legend Figure 1.** Mean light-saturated photosynthetic rate ($A_{\text{max}}$) of apical (A), mature (B) and old foliage (C) in the crowns of trees in thinned and unthinned treatments at Creekton from October 1998 to May 1999. Error bars show mean standard errors. Old foliage was measured in the lower and middle crown zones only. Old foliage in the middle zone of the unthinned treatment was not measured in the third measurement period.

Medhurst JL and Beadle CL (Tree Physiol. 25, 981-991)
Table 1. Fungal collections and isolates included in this study that were morphologically identified and/or sequenced by the current authors. Collector’s numbers beginning with E are held at the Western Australian Herbarium, Perth, those beginning with T at the CSE (CSIRO Sustainable Ecosystems) herbarium, located at Sandy Bay, Tasmania. The Northern Territory collections, beginning with C, are housed at the Northern Territory Department of Primary Industries, Fisheries and Mines. The four cultures (FRIM numbers) are held at Forest Research Institute, Malaysia. FRIM 589 was supplied by the Rubber Research Institute of Malaysia.

<table>
<thead>
<tr>
<th>Collector’s number</th>
<th>Species</th>
<th>Material</th>
<th>Loc., Host and Collector</th>
<th>GenBank Accession</th>
</tr>
</thead>
<tbody>
<tr>
<td>E7070</td>
<td><em>A. rugosum</em></td>
<td>Sporocarp</td>
<td>West Java, <em>A. mangium</em>, Bougher</td>
<td>AJ536659</td>
</tr>
<tr>
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<td><em>A. rugosum</em></td>
<td>Sporocarp</td>
<td>West Java, <em>A. mangium</em>, Bougher</td>
<td>AJ536660</td>
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<td>E7113</td>
<td><em>A. rugosum</em></td>
<td>Sporocarp</td>
<td>South Sumatra, <em>A. mangium</em>, Bougher</td>
<td>AJ536664</td>
</tr>
<tr>
<td>E7366</td>
<td><em>A. rugosum</em></td>
<td>Sporocarp</td>
<td>East Kalimantan, <em>A. mangium</em>, Bougher</td>
<td>AJ537402</td>
</tr>
<tr>
<td>E7385</td>
<td><em>Fomitopsis feei</em></td>
<td>Sporocarp</td>
<td>East Kalimantan, host unknown, Bougher</td>
<td>AJ537392</td>
</tr>
<tr>
<td>T210</td>
<td><em>G. aff. steyaertanum</em></td>
<td>Sporocarp</td>
<td>Central Java, <em>A. mangium</em>, Irianto</td>
<td>EU239384</td>
</tr>
<tr>
<td>T211</td>
<td><em>G. aff. steyaertanum</em></td>
<td>Sporocarp</td>
<td>Central Java, <em>A. mangium</em>, Irianto</td>
<td>EU239385</td>
</tr>
<tr>
<td>E3795</td>
<td><em>G. australie</em></td>
<td>Sporocarp</td>
<td>Tasmania, host unknown, Gates</td>
<td>AJ608709</td>
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<tr>
<td>E7101</td>
<td><em>G. australie</em></td>
<td>Sporocarp</td>
<td>Riau, <em>A. mangium</em>, Bougher</td>
<td>EU239383</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EU239389</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EU239390</td>
</tr>
<tr>
<td>FRIM 98</td>
<td><em>G. mastoporum</em></td>
<td>Culture</td>
<td>Malaysia, host unknown, Lee</td>
<td>AJ627585</td>
</tr>
<tr>
<td>E7107</td>
<td><em>G. mastoporum</em></td>
<td>Sporocarp</td>
<td>South Sumatra, <em>A. mangium</em>, Bougher</td>
<td>AJ537399</td>
</tr>
<tr>
<td>E7109</td>
<td><em>G. mastoporum</em></td>
<td>Sporocarp</td>
<td>South Sumatra, <em>A. mangium</em>, Bougher</td>
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</tr>
<tr>
<td>E7092</td>
<td><em>G. philippi</em></td>
<td>Sporocarp</td>
<td>Riau, <em>A. mangium</em>, Bougher</td>
<td>AJ608710</td>
</tr>
<tr>
<td>E7098</td>
<td><em>G. philippi</em></td>
<td>Sporocarp</td>
<td>Riau, <em>A. mangium</em>, Bougher</td>
<td>AJ536662</td>
</tr>
<tr>
<td>E7108</td>
<td><em>G. philippi</em></td>
<td>Sporocarp</td>
<td>South Sumatra, <em>A. mangium</em>, Bougher</td>
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</tr>
<tr>
<td>E7376</td>
<td><em>G. philippi</em></td>
<td>Sporocarp</td>
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<td>E7425</td>
<td><em>G. philippi</em></td>
<td>Sporocarp</td>
<td>Malaysia, <em>A. mangium</em>, S. Ito</td>
<td>AJ608713</td>
</tr>
<tr>
<td>FRIM 589</td>
<td><em>G. philippi</em></td>
<td>Culture</td>
<td>Malaysia, <em>Lithocarpus lucidus</em>, collector unknown</td>
<td>AJ627584</td>
</tr>
<tr>
<td>FRIM 138</td>
<td><em>Ganoderma sp</em></td>
<td>Culture</td>
<td>West Kalimantan, <em>A. mangium</em>, Lee</td>
<td>AJ698114</td>
</tr>
<tr>
<td>C17274</td>
<td><em>Ganoderma sp</em></td>
<td>Sporocarp</td>
<td>Northern Territory, <em>A. crassicarpa</em>, Daly</td>
<td>EU239388</td>
</tr>
<tr>
<td>C16452</td>
<td><em>Ganoderma sp</em></td>
<td>Sporocarp</td>
<td>Northern Territory, <em>Carpentaria acuminata</em>, Daly</td>
<td>EU239386</td>
</tr>
<tr>
<td>C16722</td>
<td><em>Ganoderma sp</em></td>
<td>Sporocarp</td>
<td>Northern Territory, <em>Casuarina equisetifolia</em>, Daly</td>
<td>EU239387</td>
</tr>
<tr>
<td>FRIM 95</td>
<td><em>G. subresinosum</em></td>
<td>Culture</td>
<td>Malaysia, <em>A. mangium</em>, Lee</td>
<td>AJ627583</td>
</tr>
</tbody>
</table>

Fig. 1 a. Sporocarps of *Ganoderma philippii* (collector’s number E7108) growing on the trunk of a dead *Acacia mangium*. b. Underside of *Ganoderma philippii* sporocarps.

Constructing Tables

**Formatting**
- Align column headings with entries
- Capitalise first word of an entry
- Use spacing to reduce complexity

**Editing**
- Use the Table legend as a title that describes its content
- Place details about methods, statistics and specifics in footnotes
- Define abbreviations in footnotes
- Put units into column headings
- Make sure that the hierarchical structure is correct and all necessary information is in Table, not just legend
Example: How to improve a Table

“Before…..”

Table 1. Leaf dry weight of three pea varieties grown at different temperatures (g). Values are given as means ($n = 30$). Within a column, means followed by the same letter are not significantly different at $P < 0.05$, using the Tukey test. Heat events were introduced at weekly intervals.

<table>
<thead>
<tr>
<th>Varieties</th>
<th>Temperature</th>
<th>Days after sowing</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>HE 40 55 70</td>
<td></td>
</tr>
<tr>
<td>BC-12876</td>
<td>18°C</td>
<td>35°C 0.40 a</td>
<td>3.88 a 0.17 a</td>
</tr>
<tr>
<td>BC-12876</td>
<td>22°C</td>
<td>38°C 0.52 a</td>
<td>0.43 b 1.20 b</td>
</tr>
<tr>
<td>BC-12876</td>
<td>25°C</td>
<td>38°C 1.35 b</td>
<td>5.36 a 4.20 c</td>
</tr>
<tr>
<td>P-116</td>
<td>18°C</td>
<td>35°C 0.54 a</td>
<td>0.48 b 1.99 b</td>
</tr>
<tr>
<td>P-116</td>
<td>22°C</td>
<td>38°C 0.75 a</td>
<td>1.25 b 1.56 b</td>
</tr>
<tr>
<td>P-116</td>
<td>25°C</td>
<td>38°C 0.22 a</td>
<td>2.07 b 1.43 b</td>
</tr>
<tr>
<td>T-163</td>
<td>18°C</td>
<td>35°C 0.08 a</td>
<td>0.12 a 0.97 a</td>
</tr>
<tr>
<td>T-163</td>
<td>22°C</td>
<td>38°C 2.34 c</td>
<td>2.44 a 1.67 b</td>
</tr>
<tr>
<td>T-163</td>
<td>25°C</td>
<td>35°C 0.31 a</td>
<td>0.29 a 3.30 c</td>
</tr>
</tbody>
</table>

“After…..”

Table 1. Leaf dry weights of three pea varieties grown at different temperatures.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Temperature (°C)</th>
<th>Days after sowing</th>
<th>Leaf dry weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean HE 40 55 70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BC-12876</td>
<td>18 a 35 a</td>
<td>0.40 a 3.88 a 0.17 a</td>
<td></td>
</tr>
<tr>
<td></td>
<td>22 a 38 a</td>
<td>0.52 a 0.43 b 1.20 b</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25 a 38 a</td>
<td>1.35 b 5.36 a 4.20 c</td>
<td></td>
</tr>
<tr>
<td>P-116</td>
<td>18 a 35 a</td>
<td>0.54 a 0.48 b 1.99 b</td>
<td></td>
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<tr>
<td></td>
<td>22 a 38 a</td>
<td>0.75 a 1.25 b 1.56 b</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25 a 38 a</td>
<td>0.22 a 2.07 b 1.43 b</td>
<td></td>
</tr>
<tr>
<td>T-163</td>
<td>18 a 35 a</td>
<td>0.08 a 0.12 a 0.97 a</td>
<td></td>
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<tr>
<td></td>
<td>22 a 38 a</td>
<td>2.34 c 2.44 a 1.67 b</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25 a 35 a</td>
<td>0.31 a 0.29 a 3.30 c</td>
<td></td>
</tr>
</tbody>
</table>

Values are given as means ($n = 30$).
HE, heat event (introduced at weekly intervals).
Within a column, means followed by the same letter are not significantly different at $P < 0.05$, using the Tukey test.
Introduction

- First go straight to the issue in the first paragraph
- Then the necessary background
- Finish with a concise description of the contribution of this paper (objectives, hypotheses)

References should include:

- The major works that launched your thinking for this paper
- Your previous work in this area
Quantifying the erosion processes and land-uses which dominate fine sediment supply to Moreton Bay, Southeast Queensland, Australia

Peter J. Wallbrink

Co-operative Research Centre for Catchment Hydrology, P.O. Box 1666, Canberra, ACT 2601, Australia

CSIRO, Division of Land and Water, G.P.O. Box 1666, c/o Christian Building, Canberra, ACT 2601, Australia

1. **Introduction**

Moreton Bay in Southeast Queensland, Australia is experiencing ongoing turbidity and sedimentation, the source of which is fine grained material eroded from the catchment. This has resulted in a loss of seagrasses in the Bay, and degradation of marine habitats and associated estuaries (Caitcheon et al., 2001). Knowing the relative importance of the erosion processes that supply sediments to the rivers draining into the bay is an essential part of targeting conservation works. Erosion processes include sheet erosion from paddocks, rill erosion from cultivated fields and subsoil erosion from sides and bottoms of gullies and stream bank erosion from river channels. It is rare that any one process is responsible for the complete supply of eroded material in a catchment. Often all these processes supply material but in different amounts. When the different contributions from these main processes are quantified, catchment works aimed at reducing the supply of sediment to streamlines can then target the appropriate sources. In this paper, combined measurements of $^{137}$Cs and $^{226}$Ra are used to determine the primary landuses and erosion processes supplying fine grained $<$10 $\mu$m sediment to the major rivers that drain into Moreton Bay.

$^{137}$Cs is a product of atmospheric nuclear weapons testing that occurred during the 1950s–1970s (Longmore et al., 1983). After deposition, it binds tightly to fine soil particles, particularly clays, (Lomenick and Tamura, 1965) and is concentrated in the upper 10 cm of the soil profile (Peart and Walling, 1986, Loughran et al., 1987, Walling and Woodward, 1995, Basher et al., 1995, Wallbrink et al., 1999). Due to mixing of the soil during cultivation, the depth distribution of $^{137}$Cs is different between cultivated and uncultivated soils (Walling and Woodward, 1995, He and Owens, 1995). Under some circumstances, concentrations of the naturally occurring lithogenic radionuclide $^{226}$Ra have also been found to be different in uncultivated soils, cultivated soils and channel bank material (Nozaki et al., 1978, He and Owens, 1995). In the Southeast Queensland catchments, these two radionuclides have been used to calculate the relative contribution of sediments eroded from cultivated and uncultivated areas, and from subsoil erosion. The method involves comparing the radionuclide concentrations in samples collected from the erosion sources with concentrations in samples collected from river sediments downstream. A mixing model is then used to calculate the relative proportions of the sources to the river sediment samples. The study focused on the $<$10 $\mu$m fraction of the erosion sources and deposited sediments.
Use of SNP genotyping to determine pedigree and breed composition of dairy cattle in Kenya

Introduction: Coefficients of relationship between pairs of individuals play a very important role in many areas of quantitative genetics, conservation genetics and molecular ecology. Knowledge of the genetic relationships in different populations is used for the estimation of quantitative genetic parameters (e.g. heritabilities and genetic covariances) and breeding values (Lynch & Walsh 1998; Ritland 2000), is necessary for kin selection (Morin et al. 1994), and allows for the study of mating systems (Engh et al. 2002; Frankham et al. 2002). In the management of populations, availability of pedigree structure or the co-ancestries between the individuals that belong to it helps to avoid the loss of diversity and control inbreeding (Ballou & Lacy 1995; Meuwissen 1997; Caballero & Toro 2000; Frankham et al. 2002).

In many developing countries, such as those of East Africa, the necessary pedigree and performance data are often not reliably recorded or are unavailable (Rege et al. 2001). Furthermore, the relatively few exotic (i.e. non-indigenous) genotypes available for import as semen are typically selected on the basis of their genetic merit under European or North American production systems. Consequently, losses because of disease and other environmental demands may be high and this presumably further narrows the range of exotic genetics in the African dairy herds (McDermott & Arimi 2002; Mattioli et al. 2000). There is reason for concern that the herds are subject to inbreeding and subsequent depression of productivity (Rege et al. 2001).

Another risk with importation of exotic germplasm is the loss of species diversity because of elimination of native stock from the African breeding population. Centuries of natural selection have resulted in native African cattle which are adapted for the harsher conditions, and these genetic resources may be lost if too many matings occur to animals of European ancestry. Studies utilizing high-density markers enable researchers to assess the current levels of genetic diversity and determine the optimal method for conservation of genetic diversity (Oliehoek et al. 2006; Windig & Engelsma 2009). Currently, genetic information about Kenyan cattle is missing, which makes determining the best method of conservation impractical.

Therefore, the objective of this study was to use large-scale SNP data to determine parentage and breed composition of each animal in an admixed population of dairy cattle in Kenya. The determination of breed composition of parents and offspring could provide information on how to improve population management as accurate pedigree records are not available for this assessment.
Cover Cropping and Nutrient Management Strategies for Maize Production in Western Africa

J M Sogbedji, H M van Es, K L Agbeko (Agron. J. 98, 883-889)

Introduction: Declining soil fertility in sub-Saharan Africa has been documented by several studies (Stoorvogel et al., 1993; Smaling, 1993; Poss et al., 1997), and has occurred because traditional shifting cultivation has disappeared in most areas due to land pressure from increasing population and competing land-use demands. In the coastal region of West Africa, the Ferralsols on which maize, the primary staple food crop, is grown are fragile and need to support a dense population of >220 inhabitants km^-2 (Poss et al., 1997; Manyong et al., 1999). The demand for high productivity on these soils has increased the need for replenishment of nutrients. Under the socio-economic conditions in Africa, such systems must focus on the maximum use of organically derived nutrients and the minimal use of costly purchased inputs (Smaling et al., 1992). In West Africa, cropping systems involving grain legumes such as cowpea [Vigna unguiculata (L.) Walp.], pigeon pea, soybean [Glycine max (L.) Merr.], and groundnut (Arachis hypogaea L.) in rotation with maize improved soil fertility and increased maize yields by about 50% (Hulugalle and Lal, 1986; IFDC, 1990, 1992, 1993). Improved soil fertility and maize yields have also been obtained with cropping systems that include annual nonfood grain legumes such as lablab (Lablab purpureus L.) and mucuna as cover crops in rotation or intercropped with maize (Sanginga et al., 1996; Galiba et al., 1998; Sedga and Toe, 1998; Manyong et al., 1999). However, such cropping systems imply a loss of grain production from the second annual growing season, and therefore require considerable maize yield increases for the first season. Short-duration, planted tree fallows, using fast growing legume species, have also been identified as a means of restoring soil fertility and increasing maize yield. Research efforts in Africa (IFDC, 1993; Barrios et al, 1997; Bashir et al., 1998) indicated that short-duration improved fallows with pigeon pea, leucaena [Leucaena leucocephala (Lam.) de Wit], sesbania (Sesbania sesban Merr.) et c., resulted in soil fertility improvement and increased maize yields.

Although organic agricultural technology may result in improvement of soil fertility and maize yield in subSaharan Africa, questions remain about the potential of the technology alone to sustain high maize yields (Place et al., 2003; Sanchez and Jawa, 2002; Carsky et al., 1999). Several other studies (Fieri, 1989; van Reuler and Prins, 1993; Adetunji, 1997) concluded that the combined application of mineral and organic fertilizers, together with methods to conserve organic matter may be the most promising strategies for improving soil fertility and sustaining maize yields. However, some key questions still remain regarding (i) the frequency of the use of cover crops to sustain high maize yields and (ii) the quantity and timing of supplemental fertilizer applications.

The sustainability of a cropping system is primarily a function of crop yield and the associated fertility status of the soil. The harvested produce is the major avenue of nutrient removal, particularly in annual crops (Nair, 1993). On the average, 1 ha of harvested maize removes 100 to 150 kg of the major nutrients N, P, and K (FAO, 1990). The dynamics of plant nutrient uptake is quite complex and a time lag exists between when nutrients are available and when plant roots absorb them, during which the nutrients are vulnerable to losses (Zhang et al., 1996). Nutrient loss potential is a function of nutrient type, soil type, weather conditions, and cropping system (Fieri, 1989; Christianson and Vlek, 1991; Alva and Wang, 1996; Sogbedji et al., 2000). Nitrogen and P behave quite differently in the soil environment, where N is biologically very dynamic and, after conversion to NO₃, very mobile, while P may quickly become inaccessible to crops due to chemical precipitation. These nutrient dynamics are still poorly understood in complex cropping systems that include organic inputs.

The objectives of this research were (i) to determine the effects of three cropping systems including various organic and inorganic nutrient inputs on maize grain yield and the profitability of each system and (ii) to establish and compare N and P budgets under the three systems. The ultimate aim was to identify appropriate cropping systems that have the potential to sustain maize production and minimize nutrient depletion from soils in coastal West Africa.
Conclusions

The Conclusion should:

- Précis the context and purpose of the paper
- Conclude (not summarise) each of the main items in the Results/Discussion sections
- Instruct where findings will work
- Foreshadow ongoing questions and the next move
Introduction

- First paragraph: issue(s), context, rationale
- Second-third paragraph: necessary background, summary/overview of previous work
- Finish with a concise description of the contribution of this paper (objectives, hypotheses)

Conclusion

- Précis the context and ‘answer’ the purpose of the paper (i.e. objective met or hypotheses proven/disproven) → present main contribution
- State related or supporting findings, concluding insights (not summaries) of the main items in the Results/Discussion
- Instruct where findings will/might work & state ongoing questions and the next move
## Agenda Day 3

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00</td>
<td>Revision of Introduction and Conclusion</td>
</tr>
<tr>
<td>08.30</td>
<td>The Discussion and writing the final version (Chris B)</td>
</tr>
<tr>
<td>09.15</td>
<td>Individual work on final version</td>
</tr>
<tr>
<td>10.00</td>
<td>Morning coffee/tea</td>
</tr>
<tr>
<td>10.15</td>
<td>Individual work continued</td>
</tr>
<tr>
<td>12.30</td>
<td>Lunch</td>
</tr>
<tr>
<td>13:15</td>
<td>Seminar “Beyond the scientific article: making your research social” (Ethel M)</td>
</tr>
<tr>
<td>15.15</td>
<td>Morning coffee/tea</td>
</tr>
<tr>
<td>15.30</td>
<td>Individual work continued</td>
</tr>
<tr>
<td>16.00</td>
<td>Review of draft by Colleague 2 (the five critical questions)</td>
</tr>
<tr>
<td>16.30</td>
<td>Revision of draft</td>
</tr>
<tr>
<td>17.15</td>
<td>Appraisal and Feedback for Day 3</td>
</tr>
<tr>
<td>17.30</td>
<td>Finish</td>
</tr>
<tr>
<td>19.00</td>
<td>‘Semi-formal’ dinner at ILRI campus</td>
</tr>
</tbody>
</table>
What is Discussion?

Your interpretation of what the data means

- Must be clearly distinct from the Results
- It is not a treatise (literature review) on the paper’s subject
- Use the literature to support your arguments
- Make sure you address any stated hypotheses
- Is what you are writing fitting with the Concept Plan?

List 4-8 points that are outcomes of interest from the study e.g.

- Maximum photosynthetic rate was positively correlated with foliar P content
- Older animals and animals of Friesian breed have increased odds of having been infected
- A substantial proportion of the analysed candidate genes showed $P$-values $\leq 0.10$

Start with a summary of main outcomes from study

Avoid repetition!
Developing the Discussion

- Before you start, consult your Concept Plan and re-read your hypotheses (or aims and objectives)

- The Discussion is a collection of arguments about the relevance, usefulness, possibilities and limitations of what you did

- Each argument will be a separate piece of logical writing which is captured in a single paragraph, that is the paragraph is the development of one idea.

- A well-written paragraph will have three components, the topic sentence, logical development, and a concluding message

- The concluding message may also be used to lead the reader into a new but related idea to that just discussed
Discussion – Paragraph Structure

**Topic sentence**

- Acts as a short summary of the main point being made
- Provides the reader with a clear idea of what is likely to follow
- If possible, logically links with the previous paragraph

**Logical development**

- Consists of 2-4 sentences which combine facts from your results with currently accepted facts and theories from within the literature to substantiate the point you are making
- Expresses a degree of confidence that is defined by your statistical analysis and the scope of your research
- Uses processes of deduction that will lead to a sound concluding sentence

**Concluding message**

- Emphasises the point you are making with a clear message to the reader
Topic sentence 1
- Maize plants sown before July were not only resistant to insect attack but produced larger grains

Logical development

Concluding message 1
- If grain weight must be > 3.5 g for processing, then the maize crop must be planted before July

Topic sentence 2
- By contrast with the daily gain in live weight, wool production was unaffected by high temperature

Logical development

Concluding message
- Thus there is no reason to believe that high summer temperatures depress wool production
Writing the Final Version

Leave the outline in place until you are happy with the draft (using 2\textsuperscript{nd} font)

Avoid hang-ups – leave questions, clarifications for later (use 3\textsuperscript{rd} font), for example

- “Check that Caitcheon \textit{et al.} said that”
- “Modify Figure 4”
- “Need another reference to support this conclusion”
- Use symbolic reminder e.g. “??”, then search and replace

Avoid scrolling when writing; if you add references, use a split screen to keep continuity; read manuscript aloud to check it makes sense
## Agenda Day 4

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>08.00</td>
<td>The Abstract and Title (Peter W)</td>
</tr>
<tr>
<td>08.45</td>
<td>Individual work on the Abstract and Title</td>
</tr>
<tr>
<td>10.00</td>
<td>Coffee with ILRI campus</td>
</tr>
<tr>
<td>11.00</td>
<td>Review of Abstract and Title by Colleague 1</td>
</tr>
<tr>
<td>11.30</td>
<td>Revision of Abstract and Title</td>
</tr>
<tr>
<td>12.30</td>
<td>Lunch</td>
</tr>
<tr>
<td>13.15</td>
<td>Individual work on draft</td>
</tr>
<tr>
<td>14.30</td>
<td>Authorship and Acknowledgments (Chris B)</td>
</tr>
<tr>
<td>14.45</td>
<td>Individual work on Authorship and Acknowledgments</td>
</tr>
<tr>
<td>15.15</td>
<td>What next? Outstanding work; follow up work; managing the editorial process; managing the review and revisions (Chris B)</td>
</tr>
<tr>
<td>15.45</td>
<td>Appraisal and Feedback for Day 4</td>
</tr>
<tr>
<td>16.00</td>
<td>Finish</td>
</tr>
<tr>
<td>19.00</td>
<td>Final workshop dinner at an Ethiopian cultural restaurant</td>
</tr>
</tbody>
</table>
Abstract and Title

Why are these so important?

“..., it has been claimed that up to half the world’s published scientific papers are never read by anyone other than their authors, editors and reviewers – and 90 per cent are never cited...”
Abstract and Title

Why are these so important?

- The decision to read your paper is based on a 2 to 20 second scan of your Title and Abstract – don’t lose the reader because these items are not up to scratch.
- Many Titles are misleading
- Abstract must “grab” the reader in the first sentence
- Body of Abstract must be concise
- Chose words in the Title and Keywords carefully as search engines use these in their indexing
- Independent review of your Abstract by a non-specialist may increase your citations

**Title:** A leaf elongation assay detects an unknown growth inhibitor in xylem sap from wheat and barley

**Abstract:** Recent research suggests that chemicals sent from roots in the transpiration stream could control leaf expansion, and that xylem sap from plants in dry and saline soil contain increased amounts of growth inhibitor, or decreased amounts of growth promoter. In order to test these possibilities, a bioassay that could detect the presence of growth regulators in xylem sap was developed using whole shoots of wheat and barley seedlings. The bioassay showed that xylem sap collected from intact, transpiring plants in a drying soil contained a strong growth inhibitor. The inhibitory substance was not abscisic acid: while the concentration of abscisic acid in the sap rose as the soil dried, the highest concentration found, $4 \times 10^{-8}$ M, was too low to inhibit leaf expansion. The identity of the new inhibitor is unknown.

**Title:** Use of SNP genotyping to determine pedigree and breed composition of dairy cattle in Kenya

**Abstract:** High levels of inbreeding in East African dairy cattle are a potential concern because of use of a limited range of imported germplasm coupled with strong selection, especially by disease, and sparse performance recording. To address this, genetic relationships and breed composition in an admixed population of Kenyan dairy cattle were estimated by means of a 50K SNP scan. Genomic DNA from 3 worldwide Holstein and 20 Kenyan bulls, 71 putative cow-calf pairs, 25 cows from a large ranch and 5 other Kenyan animals were genotyped for 37,238 informative SNPs. Sires were predicted and 89% of putative dam-calf relationships were supported by genotype data. Animals were clustered with the HapMap population using Structure software to assess breed composition. Cows from a large ranch primarily clustered with Holsteins, while animals from smaller farms were generally crosses between Holstein and Guernsey. Coefficients of relatedness were estimated and showed evidence of heavy use of one AI bull. We conclude that little native germplasm exists within the genotyped populations and mostly European ancestry remains.
C. McCaughey et al (Epidemiol. Infect. 38, 21-27)

**Title:** *Coxiella burnetii* (Q fever) seroprevalence in cattle

**Abstract:** Human cases of Q fever appear to be common in Northern Island compared to the rest of the British isles. The purpose of this study was to describe the seroepidemiology of *Coxiella burnetii* infection in cattle in Northern Ireland in terms of seroprevalence and determinants of infection. A total of 5182 animals (from a stratified systematic random sample of 273 herds) was tested with a commercial *C. burnetii* phase 2 IgG ELISA. A total of 6.2% of animals and 48.4% of herds tested positively. Results from a multilevel logistic regression model indicated that the odds of cattle being infected with Q fever increased with age, Friesian breed, being from large herds and from dairy herds. Large dairy herd animal prevalence was 12.5% compared to 2.1% for small beef herds. Preliminary seroprevalence in sheep (12.3%), goats (9.3%), pigs (0%) rats (9.7%) and mice (3.2%) using indirect immunofluorescence is reported.

**Key words:** *Coxiella*, epidemiology, Q fever, serology, zoonoses
Authorship and Acknowledgment (one approach)

This presentation includes text from the AUSTRALIAN CODE FOR THE RESPONSIBLE CONDUCT OF RESEARCH


Science Paper Writing Workshop Chris Beadle, Peter Willadsen (designed by Peter Hairsine), CSIRO
Agree on Authorship

Collaborating researchers should agree on authorship of a publication at an early stage in the research project and should review their decisions periodically.
Researchers must offer authorship to all people, including research trainees and technicians, who meet the criteria for authorship. Those offered authorship must accept or decline in writing.
Criteria for authorship

- Authorship must be based on substantial contribution:
  - conception and design of the project
  - analysis and interpretation of research data
  - drafting significant parts of the work or critically revising it so as to contribute to the interpretation.

- The right to authorship is not tied to position

- It is not enough to have provided materials or routine technical support, or to have made the measurements on which the publication is based

- Substantial intellectual involvement is required
None of the following contributions, by themselves, justifies including a person as an author:

- being head of department, holding other positions of authority, or personal friendship with the authors
- providing a technical contribution but no other intellectual input to the project or publication
- providing routine assistance in some aspects of the project, the acquisition of funding or general supervision of the research team
- providing data that has already been published or materials obtained from third parties, but with no other intellectual input
Prepare an authorship agreement at an early stage of the research. The agreement should be reviewed periodically.

- Agree on authors and order in the paper
- Agree on the roles of the authors in the research and in preparing the paper
- Agree on the author who will collate all materials and data and prepare drafts of the manuscript (usually first author, the primary researcher)
Agree on the corresponding author (usually last or senior author): to manage communication about the work with the publisher and with readers of the published paper

Agree on timelines in the preparation and co-author review of the paper

**IMPORTANT:** Agree that the paper will not be submitted to a journal until all authors have reviewed and given written consent
Acknowledge other contributions fairly

- Where individuals are to be named, their written consent should be obtained.
- Acknowledge
  - All those who have contributed to the research
    - Facilities
    - Services
    - Materials
    - Unpublished data
  - Donors (donors may require specific grants to be acknowledged)
  - Reviewers
Outstanding work (on this paper)

- Write a list of outstanding work
- Schedule blocks of time (2 to 3 hours) to finish each item
- Leave routine work (e.g. figure improvements and reference formatting) for the smaller slots
- Set a deadline and stick to it
- If necessary use a non-technical editor to assist with the grammatical and narrative improvements
Manage the review and revision process

Your manuscript is likely to get four or more reviews.

- Follow the internal and journal process instructions strictly; many delays are the result of authors missing steps

- Consider specifying the emphasis in the internal reviews e.g. Reviewer 1 “Please place some emphasis on reviewing my statistical approach”; Reviewer 2 “Does the Introduction capture your understanding of the current thinking in this area?”

- If you have any doubt about the suitability of a paper for a journal, write to the editor or associate editor first

- If the journal requires suggested reviewers, prewarn your nominees – you will suffer less delays as a result

- In replying to reviewers comments, follow the editors instructions and provide a response sheet so it is clear how you have responded to each item of feedback e.g. made change; refuted; clarified
Back in the real world

- Strike a deal with a writing buddy (buddies)
- Put a diary entry for writing; follow the rules learnt here
- Seek sign-on from your supervisor
- Seek sign-on from your colleagues (respect and support in workplace practices)
- Do not be too ambitious or *laissez faire*, go for achievable goals
- Fix some other issues of focus; say “no” more often, take less work home
- Start projects with the publications in mind or planned
Final comments

- Have you learnt a lot from the workshop?

- Please fill out the feedback forms

- Take some of the processes used here back into your workplace

- Always be respectful, critical and encouraging to your colleagues (have you acknowledged the help of your reviewers?)

- Manage your time to give writing papers a priority (3 hours at a time); make it a regular part of your week

- Finally, celebrate the mistakes – they are the big steps forward
### Agenda Day 5

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>08.00</td>
<td>Research proposals – general feedback (Peter W)</td>
</tr>
<tr>
<td>08.30</td>
<td>Research proposals – individual feedback (Peter W, Chris B)</td>
</tr>
<tr>
<td>08.30</td>
<td>Individual work on papers</td>
</tr>
<tr>
<td>10.00</td>
<td>Morning coffee/tea</td>
</tr>
<tr>
<td>12.30</td>
<td>Lunch</td>
</tr>
<tr>
<td>13.15</td>
<td>Individual work on papers</td>
</tr>
<tr>
<td>15.15</td>
<td>Finish and Afternoon coffee/tea</td>
</tr>
</tbody>
</table>