



Reef Rescue
Research and Development
Program



CARING
FOR
OUR
COUNTRY

Capturing historic paddock relevant catchment data to quantify management impacts on water quality (PROJECT ID:RRRD011)

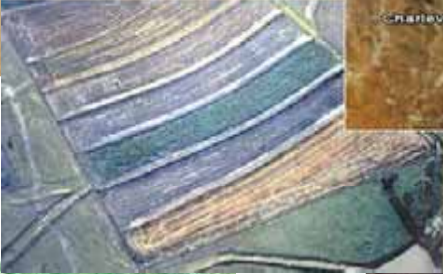


Overview

1. A summary of the issue to be addressed
2. Project Objectives
3. Approach – Team, Methods
4. Geographic scope
5. Outputs
6. Synergies
7. Management implications

1. Basic proposition - issue to be addressed

- Management is best guided by quantified relationships, empirical studies
- Many previous studies have dealt with at least part of the management-water quality issue in the GBR – this body of information is an under-utilised resource
- Sediment and chemicals move in water and water balance models provide an efficient means of connecting studies
- Expert opinion is a valuable information source for applying simple models
- Oldies but goodies can significantly add to our knowledge base



Preliminary data scan

Microsoft Excel - 110525 Experimental_sites composite.xls

File Edit View Insert Format Tools Data Window Help

100% Arial

Wrightman et al Raised bed cropping southern_Australia.pdf

Study_name	Location	Cultivars	Landuse	Description	Hydro	Sed_Er	Nutrien	Pestici	Publis	Data	Data	D	R	P	P	S	G	P	A	S	P	T	S	I	A	S	L	L	E	A	C	A	E	P	Hydro	Ref_1	Ref_2
Permanent raised bed cropping in southern Australia	Geelong	(All)	Cotton	Permanent raised bed cropping in southern Australia	y	y	y	y	n																									Wrightman et al Raised bed cropping southern_Australia.pdf	Johnston et al 2001 Runoff from raised bed crops SW Victoria.mht		
Central Qld rainfall simulation tour Oct 1992	CO	Dairy	Cotton	Rainfall simulation on a range of soil type, extension oriented, quantified runoff and sediment	y		n	n	y																									Freebairn et al 1992 Central Qld cropping rainfall simulation.doc			
Southern Qld rainfall simulation tour	SO	Dairy	Cotton	Rainfall simulation on a range of soil type, extension oriented, quantified runoff	y		n	n	y																									Cawley et al 1992 Rainfall simulation tour southern Qld.pdf			
Nutrient balance NQ Cotton management catchment study (Hopsons)	NQ	Mixed	Cotton	Nutrient balances and transport from agricultural and rainforest lands - B Prove and P Moody					n																									Prove Moody Nutrient balance and transport Johnstone River.pdf			
Pesticide process in cotton Field 21 Auscott Narrabri)	Emerald	Multiple	Cotton	On Roberts, adjacent Emerald township. Share farmer Nigel Hopson.	y	y																													Waters 2001 Cotton BMP CRDC Final Report.doc	Waters cotton cover wh Silburn 1995 Cotton erosion overview.doc	
AusCott - Warren - Fields 23 and 4 Emerald Irrigation Area soil erosion studies (Denaros? Cotton soil managemnt study (Liskeard)	Emerald	Multiple	Cotton	Black earth. Three management practices compared.	y	y																														Silburn Kennedy 2007 Rain sim pe	
EIA Furrow and rain (Noble et al- 1993)	Emerald	Multiple	Cotton	EIS furrow study pesticides																															Noble, R. M., L. J. Duivenvoorden, et al. (1997). Downstream effects of land use in the Fitzroy		
Imbil Pineapple study (ACIAR)	Imbil	Multiple	Cotton	Three slope lengths (7,12,22 m), duplicates	y	y																													Ciesiolka_pineapple_1995.pdf	Coughland Rose 1997 AC	

- N=91 so far
- Need to prioritise

Summary data

RESULTS

Table 1 presents soil erosion results over the three years 1979 to 1982. The crop rows have been grouped into three sets for presentation and analysis.

Table 1. Soil erosion from pineapple rows at Woombye, Queensland 1979-1982.

Land Slope (%)	Row Gradient (%)	1979/80 (t/ha)	1980/81 (t/ha)	1981/82 (t/ha)	Annual average (t/ha)
17	3.3	20.0a	0.8	0.1	7.0c
14	4.4	44.1ab	0.8	0.1	15.0cd
17	5.6	105.3b	2.6	0.2	36.4d

a, b significant to $P < 0.05$
 c, d significant to $P < 0.10$

Rainfall received over the three wet seasons was 467 mm, 1 368 mm and 1 355 mm respectively. Peak 30 minute rainfall intensities reached were 74 mm/hr in November 1979, 50 mm/hr in May 1980, 57.5 mm/hr in October 1980 and 126.5 mm/hr in December 1981.

FOURTH AUSTRALIAN SOIL CONSERVATION
 CONFERENCE

The Use and Management of Land for
 Sustainable Production

MAROOCHYDURE, QUEENSLAND
 22-25 October 1985

Part I - Review and Contributed Papers

Real data

Windows Explorer window showing the file structure of a folder named "data" located at "C:\Documents and Settings\jfreebairn\Desktop\SENT to Tessa 27 April 2010\data".

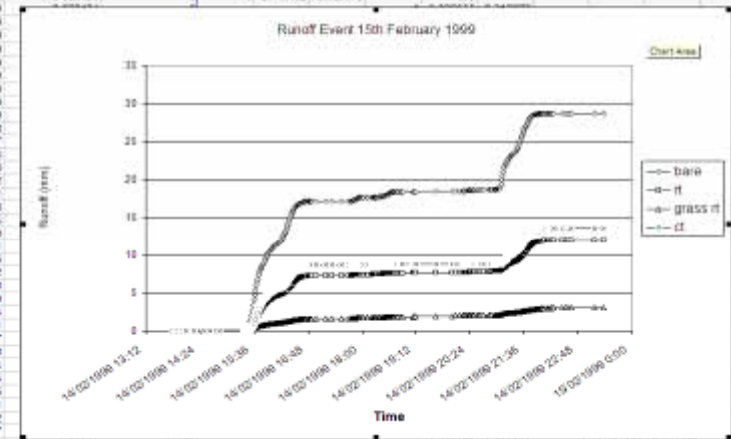
The folder structure includes:

- climate
 - Brookly Index
 - kam
 - Crops
 - Data 1990
 - Data 1991
 - Data 1992
 - Data 1993
 - Data 1994
 - Data 1995
 - Data 1996
 - Data 1997
 - Data 1998
 - Data 1999
 - data 2000
 - data 2001
 - processed datalog
 - Processed datasum
 - runoff water data
 - y5 plots
 - 11-2-99.xls
 - Mixebell.xls
 - Planting and harvest data
 - pre 1999runoff.xls
 - rainim2.xls
 - Rainim field data sheet.xls
 - Soil Lab results n,p,s,k.xls
 - solmolst_comb99-00.xls
 - solmolst_comb99-01.xls
 - stats_y5open.xls
 - stormgraph241196.xls
 - Summary of Data Collecte
 - y5 tillageops.doc
 - y6 TREATMENTS KEY.xls
- parfwin
- kzri
- parfnew
- solidata

The main pane shows a list of files and folders with columns for Name, Date Modified, Size, and Type.

Microsoft Excel window showing a spreadsheet titled "total_graph0999.xls".

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1		date	it	gross it	it	1 net top	1 best top	1 best 100m	1 runoff top	1 best 100m	1 runoff top	1 best 100m	1 runoff top	1 best 100m	1 runoff top
4	14/02/1999 13:48	0	0	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
5	14/02/1999 13:51	0	0	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
6	14/02/1999 13:55	0	0	0.038434	0	1	0.444982	26.69772	0	0	0	0	0	0	0
7	14/02/1999 13:59	0	0	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
8	14/02/1999 14:01	0	0	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
9	14/02/1999 14:04	0.038552	0	0.038434	0	1	0.444982	26.69772	0	0	0	0	0	0	0
10	14/02/1999 14:06	0.038668	0	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
11	14/02/1999 14:14	0.038858	0	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
12	14/02/1999 14:16	0.038865	0	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
13	14/02/1999 14:30	0.039255	0	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
14	14/02/1999 14:45	0.039555	0	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
15	14/02/1999 14:50	0.037111	0	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
16	14/02/1999 15:02	0.037111	0	0.038709	0	1	0.444982	26.69772	0	0	0	0	0	0	0
17	14/02/1999 15:23	0.037111	0	0.038709	0	1	0.444982	26.69772	0	0	0	0	0	0	0
18	14/02/1999 15:25	0.037111	0	0.038709	0	1	0.444982	26.69772	0	0	0	0	0	0	0
19	14/02/1999 15:26	0.115866	0.075419	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
20	14/02/1999 15:27	0.154892	0.119127	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
21	14/02/1999 15:28	0.272811	0.158836	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
22	14/02/1999 15:28	0.517576	0.239163	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
23	14/02/1999 15:30	0.831466	0.278872	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
24	14/02/1999 15:31	1.795357	0.318581	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
25	14/02/1999 15:32	1.955976	0.366008	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
26	14/02/1999 15:33	2.038175	0.475026	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
27	14/02/1999 15:34	2.811280	0.60109	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
28	14/02/1999 15:35	3.393257	0.765381	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
29	14/02/1999 15:36	4.116321	0.887236	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
30	14/02/1999 15:37	4.733812	1.054872	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
31	14/02/1999 15:38	5.318951	1.259163	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
32	14/02/1999 15:39	5.803048	1.466799	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
33	14/02/1999 15:40	6.405703	1.674435	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
34	14/02/1999 15:41	6.879862	1.882071	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
35	14/02/1999 15:42	7.353962	2.089707	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
36	14/02/1999 15:43	7.733621	2.297343	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
37	14/02/1999 15:44	8.067512	2.461024	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
38	14/02/1999 15:45	8.289376	2.625525	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
39	14/02/1999 15:46	8.471234	2.790216	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
40	14/02/1999 15:47	8.599631	2.912071	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
41	14/02/1999 15:48	8.749384	3.076362	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
42	14/02/1999 15:49	8.908877	3.190217	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0
43	14/02/1999 15:50	9.182765	3.350002	0	0	1	0.444982	26.69772	0	0	0	0	0	0	0



2. Objectives

- To capture datasets and insights from historic water quality studies that are currently poorly accessed;
- Synthesize water quality data to complement current field research
- Provide WQ modellers with a synthesis of past studies and best bet model parameters
- “Publish” findings on a publicly available WWW portal (probably DART)



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A guide to capture and synthesis of historic paddock-scale hydrology and water quality data

(RRRD01)

Prepared by: David Freebain

Prepared for: Scientists involved in water quality
studies of relevance to water quality into the
Great Barrier Reef

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Report Number: RR 102473-1
Version / Date: 110511

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A guide to capture and synthesis of historic paddock-scale hydrology and water quality data - data template

(RRR0011)

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Version / Date: 1/16/2016

RPS Australia East Pty Ltd (P

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3. Approach – Team, Methods

- Establish reference group.
- Compiled past experiments and categorise.
- Prioritise sites based on: i) localities and land use systems; ii) data sets at most risk of loss; and iii) data sets most developed.
- Collate available literature, and, using structured interviews ... capture the essence of experimental conditions;
- Applying water balance simulation, build a hydrologic context ... build best bet EMC values
- Assemble data into a structured database
- Provide awareness and training workshops.

4 Geographic scope – paddock scale

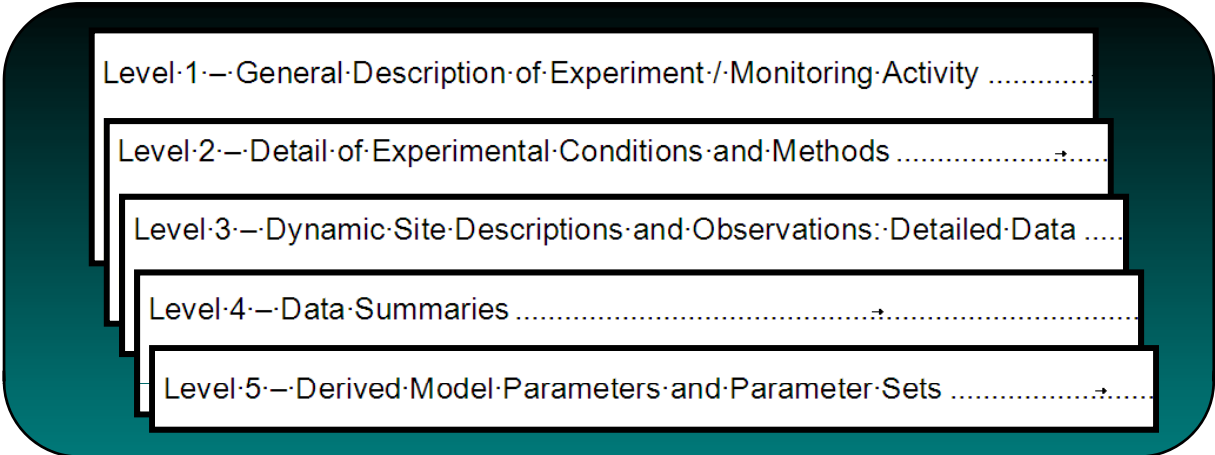
Sites ~ 100, catchments/plots >300, plot years ?



4 Geographic scope – catchment scale (Bartley and Spiers 2010)



5 Outputs



5. Outputs continued

- Capture of data that would either have gone missing or be ignored
- Awareness of and ready access to previous WQ related studies (data, reports, conclusions, summaries, model parameter sets for some)
- Provide WQ modellers with a synthesis of past studies and best bet model parameters
- Updated table of standardised EMC values
- “Publish” findings on a publicly available WWW portal

6. Synergies

- In the search
 - » Sites, people, datasets
 - » Guidance on priorities

- As a set of products
 - » Awareness of what has been before
 - » Support for ABCD framework quantifying BMPs
 - » Base data to support existing studies
 - » Reference datasets for modellers
 - » Set of documented parameter files

6. Synergies

Level 1 -- General Description of Experiment / Monitoring Activity

Level 2 -- Detail of Experimental Conditions and Methods

Level 3 -- Dynamic Site Descriptions and Observations: Detailed Data

Level 4 -- Data Summaries

Level 5 -- Derived Model Parameters and Parameter Sets



7. Management implications

- Question of depth vs. breadth? -and which sites are taken to depth
- Explore what modellers really want, need and use
- Timeliness of information exchange
- Peer review

