Harden Murrumburrah Landcare

P.O. Box 145
Harden. N.S.W. 2587

HARDEN MURRUMBURRAH LANDCARE SUSTAINABLE FARMING SYSTEMS DATABASE 1995-96

28 October, 1996

Dear Database Contributor,

The Database Committee would like to thank the 30 contributors who gave their time to complete the database form last year. Due to difficulties in getting a report completed we have finally decided to do the report ourselves. I guess it only goes to show that in the end if you want something done you have to do it yourselves.

It was hoped that the HMLG database report would be able to be incorporated into the TOP CROP program however it now is evident that this will not work to our satisfaction as they have no ability at present to analyse the data.

Members should also be aware that the analysis that Dr. John Angus of CSIRO did was done mostly as a favour to this group and it was very difficult to get it done within a timeframe.

Bearing all this in mind, your executive has contracted the Fairport Technology group, makers of PAM 'Paddock Action Manager', to write a report facility into the PAM program that will allow users to do the following:-

1. Extract a database report for the data from a standard pick list.
2. Compile all the data into a single multiclient file.
3. Allow members (approx. 13 at present) who operate PAM to transfer their cropdata for analysis without having to fill out the paper forms. This will save time for members and also for data input. Those members who do not operate PAM will still be able to complete the forms in the usual way.
4. All data will be able to be downloaded to a spreadsheet program (ie Excel) to allow all members to have access to the data, names excluded, to conduct their own further analysis if they wish. The Data will also be in a form that will allow it to be given to other researchers for analysis if members agree.
5. All crops recorded by members in PAM can be analysed in a similar way thus allowing other crops eg Canola, Lupins etc., to be analysed with no extra difficulty.

Your executive hopes that these developments will allow all the reporting and control of the database will be done locally and therefore speed up the return of information to members. In future it should be possible to give members a report of the pervious year by the end of February the following year.

1995 DATA ANALYSIS

The data has been sorted in two ways.

1. The report shows all paddocks listed in decreasing actual yield with a summary of the top and bottom 10% at the bottom.
2. The data was also sorted by Water Use Efficiency and a summary is shown at the bottom. One paddock with insufficient data was left out of the calculations.

RESULTS

1. Comparing the top and bottom 10% we see that the rainfall was considerably less (13.1%) in the bottom 10% but also the WUE of these crops was also much reduced (55.7%). This resulted in a yield penalty of 85% or 3t/ha between the top 10% and the bottom 10%. At $185/t for wheat this equals $555/ha gain for the top crops.

What might cause this?

Firstly it is important to understand that the results and conclusions drawn are not conclusive proof of the causes but rather where large variances occur they may indicate a likely cause only.

1. Looking across the data we see that the top crops were grown on high pH country with a liming rate 64.8% higher or 0.9t/ha more lime applied. At $55/t spread this equates to about 1/3 or 1/4 tonne more wheat required to cover the cost of the additional lime.

2. There were large differences in the total N available to the plant, 72%. For the purposes of this analysis total N available is equal to the N available from the soil test in February plus all applied N. It doesn't include N from mineralised Organic Matter.

The major factors involved in supplying the additional N are 132% increase in post sowing N and a 23.4% increase in OM. The extra post sowing N equates to +30 units of N or 70kg or urea. This would have cost around an extra $30.10/ha. The additional OM may also have assisted soil structure and WUE as well as providing additional N. It should also be noted that grain protein in both groups was about the same and therefore we might assume that the bottom 10% of crops were lacking in N to achieve maximum yield.

3. Another factor that may be relevant was sowing rate. Here a 20.7% variance was shown with the top crops being sown at the higher average rate of 80kg/ha.

4. John Angus found a .4t/ha benefit in wheat following canola was indicated by the top crops. It is unknown whether the effect is because the crop followed canola or lime as all these paddocks had been limed. The result could be a lime effect, a canola benefit or combination of both being the most likely, future database results should give a clearer indication.

5. A final point that seems to be evident both this year and last year is that the top 10% of crops have a more complete data set indicating that they are monitored more closely. It is hard to put a $ value/ha on this benefit but we hope it encourages you to continue monitoring.

If you have any further questions please do not hesitate to contact any member of the Committee.

Peter Holding, Ellis Murphy, John McGrath, Ric Knight Gregson, Ian McLeod, Sue McGregor, Chris Duff, Mark Barber, Greg Brown or Louise Hufton.

CODE	YR RAIN	POTENTIAL YIELD	WUE %	YIELD	PROTEIN	pH	CEC	N	P	Ca/Mg	OM	YEAR LIMED	LIME RATE	1994 ROTATION	1994 YIELD
25.004	797.0	8.2	88	7.2	12.8	5.4	8.50	71	39	7.6	2.1	1994	3.50	6. Canola	0.3
29.008	708.0	6.1	113	6.9	11.8	6.3	8.40	45	25	6.6	1.5	1994	3.00	6. Canola	0.0
25.007	797.0	8.2	83	6.8	12.5	5.4	6.10	46	30	4.5	2.0	1994	2.80	6. Canola	1.3
28.001	831.0	8.5	76	6.4	12.0	4.7	11.70		86	5.2		0	0.00	6. Canola	0.4
11.001	895.0	8.6	72	6.2	10.8	5.2	3.60	22	29	7	1.2	1994	1.80	6. Canola	0.8
25.001	797.0	8.2	75	6.2	12.6	5.2	5.80	60	46	9.6	2.3	1994	2.50	6. Canola	0.5
14.002	723.0	6.9	87	6.0	12.0	5.2	4.90	36	24	7.6	1.5	1993	2.10	6. Canola	0.0
22.001	723.0	6.9	87	6.0	12.1	5.1	5.20	12	38	8.2	1.7	1992	2.00	6. Canola	0.0
22.002	723.0	6.9	86	6.0	12.2	4.5	3.90	7	27	5.4	1.6	0	0.00	3. Oats	0.0
25.006	797.0	8.2	72	5.9	12.3	5.4	6.30	56	39	10.4	1.7	1994	2.50	6. Canola	1.3
25.002	797.0	8.2	69	5.7	12.7	5.9	6.60	34	28	6.5	1.6	1994	2.80	6. Canola	0.0
14.001	723.0	6.9	82	5.7	12.0	4.6	4.10	42	30	7.8	1.7	1990	1.90	6. Canola	0.5
29.007	708.0	6.1	92	5.6	14.1	6.3	8.40	45	25	6.6	1.5	1994	3.00	6. Canola	0.0
19.001	739.0	7.2	78	5.6	12.0	5.9	7.90	18	45	7.5	1.7	1994	2.00	6. Canola	0.0
7.001	794.0	7.8	72	5.6	12.8	4.7	3.20	8	33	4.8	1.6	0	0.00	4. Lupins	0.0
15.001	726.0	7.0	78	5.5	11.8	4.9	3.80	13	20	5.2		0	0.00	3. Oats	0.0
2.003	685.5	6.4	85	5.5	12.2	5.2	4.75		24		1.1	1994	2.00	6. Canola	1.4
6.003	794.0	7.8	70	5.5	11.8	4.8	3.70	13	42	5.4	1.2	1992	1.80	4. Lupins	0.3
13.001	728.0	7.3	74	5.4	11.0	5.4	5.80	6	47	9.2	1.3	1992	1.80	4. Lupins	0.3
29.009	708.0	6.1	86	5.3	12.4	6.3	8.40	45	25	6.6	1.5	1994	3.00	6. Canola	0.0
9.002	696.0	6.7	78	5.2	12.1	5.7	5.60	35	32	11	1.4	1994	2.30	3. Oats	1.2
25.003	797.0	8.2	63	5.2	10.8	5.5	5.20	30	52	10.8	1.1	1994	1.80	6. Canola	0.8
29.001	708.0	6.1	85	5.2	12.4	6.0	8.50	26	39	8.8	2.1	1994	3.00	6. Canola	0.0
6.002	794.0	7.8	66	5.2	12.1	6.2	9.70	33	30	8.7	2.0	1994	2.00	6. Canola	0.8
2.001	712.5	6.9	74	5.1	12.0	5.7	5.65		48		1.1	1994	2.00	6. Canola	0.9
1.001	733.5	7.3	70	5.1	11.6	4.3	3.00	40	47	4.8	1.7	1995	2.00	10. Pasture	0.0
15.001	726.0	7.0	73	5.1	11.0	5.4	4.80	22	11	6.2	0.5	1993	2.00	3. Oats	0.0
23.001	858.0	8.1	63	5.1	12.2	5.4	6.50	43	42	10.4	1.6	1994	1.25	6. Canola	0.0
6.001	794.0	7.8	65	5.1	11.2	4.5	3.80	29	42	5.2	1.4		0.00	3. Oats	2.0
5.002	913.0	9.7	52	5.0	11.6	4.6	6.00	16	54	9.2	2.2	1988	1.75	4. Lupins	0.5
10.001	835.5	8.6	58	5.0	11.7	4.8	5.80	54	32	7.3	1.9	1993	2.00	6. Canola	0.3
18.001	708.0	5.9	84	5.0	10.9	5.3	6.70	8	41	6.4	1.6	0	0.00	3. Oats	0.0
25.005	797.0	8.2	61	5.0	12.2	5.3	5.10	29	49	8	1.9	1994	1.80	6. Canola	0.8
29.006	708.0	6.1	81	5.0	11.7	5.9	7.50	36	66	5.7	1.6	1992	3.00	4. Lupins	0.0
6.004	794.0	7.8	64	5.0	11.5	4.6	4.20	14	58	4.7	1.8	0	0.00	1. Wheat	1.2
9.001	696.0	6.7	73	4.9	11.9	6.1	6.50	38	43	14	1.3	1994	3.30	6. Canola	0.4
19.002	749.0	7.3	66	4.8	12.6	6.0	7.10	33	42	6	2.1	1994	2.00	6. Canola	0.5
20.001	635.5	5.5	87	4.8	11.4	4.4	4.63	3	63		1.2	0	0.00	4. Lupins	0.0
26.001	781.0	7.7	62	4.8	10.9	4.8	3.80	40	44	6.8	1.4	1992	2.00	6. Canola	0.7
22.004	723.0	6.9	69	4.8	12.1	4.8	3.80	10	31		1.3	1991	2.00	6. Canola	0.0
29.002	708.0	6.1	78	4.8	12.0	6.6	5.70	22	56	9		1992	2.50	4. Lupins	0.0
10.002	835.5	8.6	55	4.7	11.5	5.3	6.70	26	46	6.7	2.0	1993	2.00	6. Canola	0.3
12.001	686.0	6.6	72	4.7	11.6	4.6	3.60	24	25	4.8	1.4	1995	2.00	3. Oats	1.1
19.003	739.0	7.2	65	4.7	11.0	5.1	5.80	16	36	6.1	1.5	1991	2.00	4. Lupins	0.5
8.001	895.0	8.6	54	4.6	11.5	5.3	3.90	15	28	10.3	1.1	1994	1.00	6. Canola	0.8
16.001	858.0	8.1	55	4.5	11.7	4.5		63	18	3.5		0	0.00	4. Lupins	0.0
4.001	742.0	7.5	60	4.5	11.9	4.5		36	33	4	1.4	1995	1.00	3. Oats	0.5
4.002	711.0	7.1	63	4.5	10.9	5.3		19	38	6.3	1.5	1995	1.50	4. Lupins	0.0
5.001	913.0	9.7	45	4.4	10.5	5.5	6.00	24	51	12.5	1.8	1989	1.70	6. Canola	1.3
13.002	728.0	7.3	57	4.2	11.0	5.4	4.40	3	60	8.5	1.2	1990	1.80	6. Canola	0.3
29.004	708.0	6.1	67	4.1	11.2	5.6		40				1993	3.00	6. Canola	0.0
9.003	696.0	6.7	60	4.0	11.4	5.5	5.80	35	39	7.5	1.2	1992	2.00	4. Lupins	0.3
12.002	724.5	7.2	55	4.0	10.7	4.8	4.60	19	43	5.5	1.4	0	0.00	4. Lupins	0.0
29.003	708.0	6.1	63	3.9	11.3	5.3	5.00	47	34	6.3	1.7	1993	3.00	6. Canola	0.0
21.001	719.0	7.2	53	3.8	13.0	4.4	3.70	59	40	4.4	1.6		0.00	6. Canola	0.1
22.003	723.0	6.9	55	3.8	11.7	5.6	6.10	11	41	10	1.7	1992	2.00	4. Lupins	0.0
3.001	635.5	5.5	69	3.8	11.8	5.2	4.10	22	25	4.8	0.8	0	0.00	3. Oats	0.0
2.002	712.5	6.9	53	3.6	11.1							1990	2.00	4. Lupins	0.2
29.005	708.0	6.1	53	3.2	12.0	5.2	7.20	60	43	12	1.8	1991	2.50	4. Lupins	0.0
27.001	768.0	7.4	43	3.2	11.6	4.3		1	97			1992	1.75	4. Lupins	1.0
AVERAGE	754.5	7.3		5.0	11.8	5.2	5.70	30	40	7.3	1.5		1.74		0.4
MAXIMUM	913.0	9.7	113.2	7.2	14.1	6.6	11.70	71	97	14.0	2.3		3.50		2.0
MINIMUM	635.5	5.5	43.1	3.2	10.5	4.3	3.00	1	11	3.5	0.5		0.00		0.0
top 10% (by Yield)	804	8.0	84	6.6	12.1	5.4	7.4	49	43	6.8	1.8		2.27		1
btm 10% (by Yield)	711	6.7	54	3.6	11.9	4.9	5.3	31	49	7.8	1.5		1.38		0
% variance	13.1	19.5	55.7	85.0	1.8	8.6	39.3	59.8	-13.6	-13.5	23.4		64.8		147.4
Top 10% (by WUE)	804	8.0	84	6.6	12.1	5.4	7.4	41	43	6.8	1.5		2.27		1
Btm 10% (by WUE)	711	6.7	54	3.6	11.9	4.1	3.4	38	41	5.3	1.2		1.38		0
% variance	13.1	19.5	55.7	85.2	1.8	30.4	115.7	7.0	3.7	27.4	28.5		64.8		147.4
17.001	748.5	7.5	0	0.0	12.0	4.6	2.8	0	0	5.7	0	0	0.00	4. Lupins	0.3

HARDEN MURRUMBURRAH LANDCARE DATABASE 1995

1994 P	1994 N	CULT HIST	WHEAT VARIETY	SOW RATE	SOWING DATE	PRE-SOW P	PRE-SOW N	SOW P	SOW N	POST P	POST N	TOT P	TOT N	PLANT POP	SOW DEPTH	TILLERS /PLANT	TILLERS t/m2
24	60	4	Janz	80	24-31 May			20	9	0	69	59	149	218	5.0	3.6	785
0	0	1	Dollarbird	80	24-31 May	22	10	22	10	0	46	69	111	194	2.5	0	0
24	70	3	Janz	80	13-23 May			20	9	0	58	50	113	219	5.0	3.5	767
19	81	6	Janz	90	1-10 June			20	9	0	51	106	60	0	5.0	3	0
17	17	2	Lawson	70	1-12 May			17	17	0	41	46	80	93	3.0	0	0
22	53	4	Janz	90	24-31 May			20	9	0	51	66	120	228	5.0	3.5	796
20	80	3	Janz	80	24-31 May			18	8	0	55	42	99	156	8.0	11	1719
20	40	4	Rosella	70	1-12 May			16	16	0	56	52	84	167	2.0	0	0
16	16	1	Janz	90	1-10 June			20	20	0	46	47	73	180	5.0	4	720
24	65	4	Janz	80	13-23 May			20	9	0	55	59	120	200	0.0	3	600
22	60	4	Janz	80	13-23 May			20	9	0	57	48	100	200	0.0	3	600
20	80	4	Janz	80	13-23 May			18	8	0	55	48	105	194	4.5	4	777
0	0	1	Swift	80	1-10 June	22	10	22	10	0	46	69	111	111	2.5	0	0
26	85	2	Rosella	80	1-12 May		41	20	9	0	0	65	68	244	0.0	0	0
20	9	4	Cunnigham	70	1-10 June			24	12	0	0	57	20	129	5.0	6	775
20	20	1	Janz	80	13-23 May			20	20	0	46	40	79	138	8.0	12	160
20	40	2	Rosella	80	1-12 May			22	10	0	46	46	56	206	3.0	7	1439
20	20	5	Janz	75	13-23 May			15	15	0	46	57	74	178	6.0	5	892
20	9	4	Sunmisk	80	13-23 May			20	20	0	41	67	67	137	6.4	0	0
0	0	1	Dollarbird	80	24-31 May	22	10	22	10	0	46	69	111	222	2.5	0	0
17	8	1	Janz	82	24-31 May			19	19	0	28	51	82	206	3.9	3.6	741
26	62	4	Rosella	80	1-12 May			20	9	0	57	72	96	157	5.0	4	629
0	0	4	Cunnigham	80	24-31 May	22	10	18	8	0	46	79	90	0	3.5	0	0
20	60	2	Miskle	70	13-23 May			17	17	0	46	47	96	186	5.0	8	1486
20	40	1	Janz	84	13-23 May			18	8	0	0	65	8	250	3.0	0	0
15	0	1	Dollarbird	75	13-23 May			20	18	0	0	67	58	202	4.0	4	807
20	20	1	Janz	80	13-23 May			20	20	0	46	31	88	206	4.0	3.5	720
0	0	2	Janz	80	24-31 May			20	9	0	0	62	52	0	2.0	0	0
20	20	1	Rosella	75	13-23 May			20	20	0	0	62	49	164	6.0	6	983
18	8	4	Janz	78	24-31 May			15	15	0	48	69	79	210	3.8	5.1	1073
20	50	4	Janz	80	24-31 May			16	16	0	40	48	110	133	3.0	0	0
20	20	1	Janz	80	24-31 May			20	20	0	0	61	28	0	2.0	0	0
22	60	4	Rosella	80	1-12 May			20	9	0	58	69	96	157	5.0	4	629
0	0	1	Cunnigham	80	24-31 May			29	13	0	46	95	95	0	2.5	0	0
20	20	2	Janz	80	24-31 May			17	17	0	46	75	77	186	5.0	7	1304
18	55	4	Rosella	82	1-12 May		27	19	17	0	46	62	128	200	2.7	5	1000
26	85	4	Janz	80	24-31 May		28	20	9	0	37	62	107	228	5.0	5.3	1207
20	20	4	Janz	80	13-23 May			20	20	0	46	83	69	222	3.4	0	0
20	140	4	Rosella	80	1-10 June			16	16	0	100	60	156	0	5.0	0	0
20	20	4	Janz	90	1-10 June			20	20	0	56	51	86	187	3.5	4	747
0	0	1	Cunnigham	80	24-31 May	15	7	18	8	0	46	89	83	0	4.0	0	0
20	50	4	Janz	80	24-31 May			16	16	0	40	62	82	156	3.0	0	0
15.4	7	4	Janz	75	24-31 May			17	8	0	32	42	64	233	5.0	4	933
18	16	4	Rosella	80	1-12 May			20	10	0	46	56	72	239	5.0	0	0
0	0	2	Rosella	65	13-23 May			18	18	0	41	46	74	119	3.0	0	0
20	65	4	Dollarbird	60	24-31 May			20	20	0	0	38	83	457	4.0	8	3657
8	20	1	Janz	80	13-23 May			20	8	0	0	53	44	163	4.0	6	975
8	20	0	Janz	80	24-31 May			20	8	0	0	58	27	156	4.0	6	938
20	35	4	Janz	82	24-31 May			15	15	0	46	66	85	226	4.5	5.3	1195
15	70	4	Rosella	80	25-30 April			20	20	0	54	80	77	109	6.4	7	760
0	0	1	Cunnigham	80	24-31 May			22	10	0	46	22	96	133	2.5	0	0
18	8	4	Dollarbird	85	13-23 May		25	20	20	0	42	59	122	200	2.4	3.3	660
20	9	4	Dollarbird	75	24-31 May			17	8	0	37	60	64	172	3.0	0	0
0	0	1	Cunnigham	80	24-31 May			22	10	0	46	56	103	0	2.5	0	0
20	70	4	Sunmisk	70	1-12 May			15	7	0	0	55	66	155	5.0	4.5	695
16	16	4	Janz	30	0			16	16	0	0	57	27	113	3.5	5	567
18	18	4	Dollarbird	70	21-30 June			20	20	0	0	45	42	269	3.0	0	0
22	10	4	Sunbri	81	1-12 May			18	8	0	0	18	8	194	3.5	0	0
0	0	1	Darter	95	1-12 May			15	7	0	46	58	113	133	2.5	0	0
25	11	3	Janz	60	1-10 June			20	20	0	90	117	111	79	5.0	0	0
16	32	2.9		78				19	13	0	38	59	82	160	4	3	554
26	140	6.0		95		22	41	29	20	0	100	117	156	457	8	12	3657
0	0	0.0		30		15	7	15	7	0	0	18	8	0	0	0	0
18	47	3		82		22	10	20	11	0	53	66	106	159	4.3	2.3	391
17	21	3		68		0	0	17	13	0	23	58	61	157	3.8	1.6	210
5.0	124.8	0.0		20.7				14.2	-19.3		132.4	13.1	72.6	0.9	13.3	43.2	86.1
18	47	3		82		11	5	20	11	0	53	66	106	159	3.8	2.3	391
17	21	3		68		0	0	17	13	0	23	58	61	157	3.8	1.6	210
5.0	124.8	0.0		20.7				14.2	-19.3		132.4	13.1	72.9	0.9	0.0	43.2	86.1
0	0	3	Janz	80	13-23 May	0	0	0	0	0	0	0	0				