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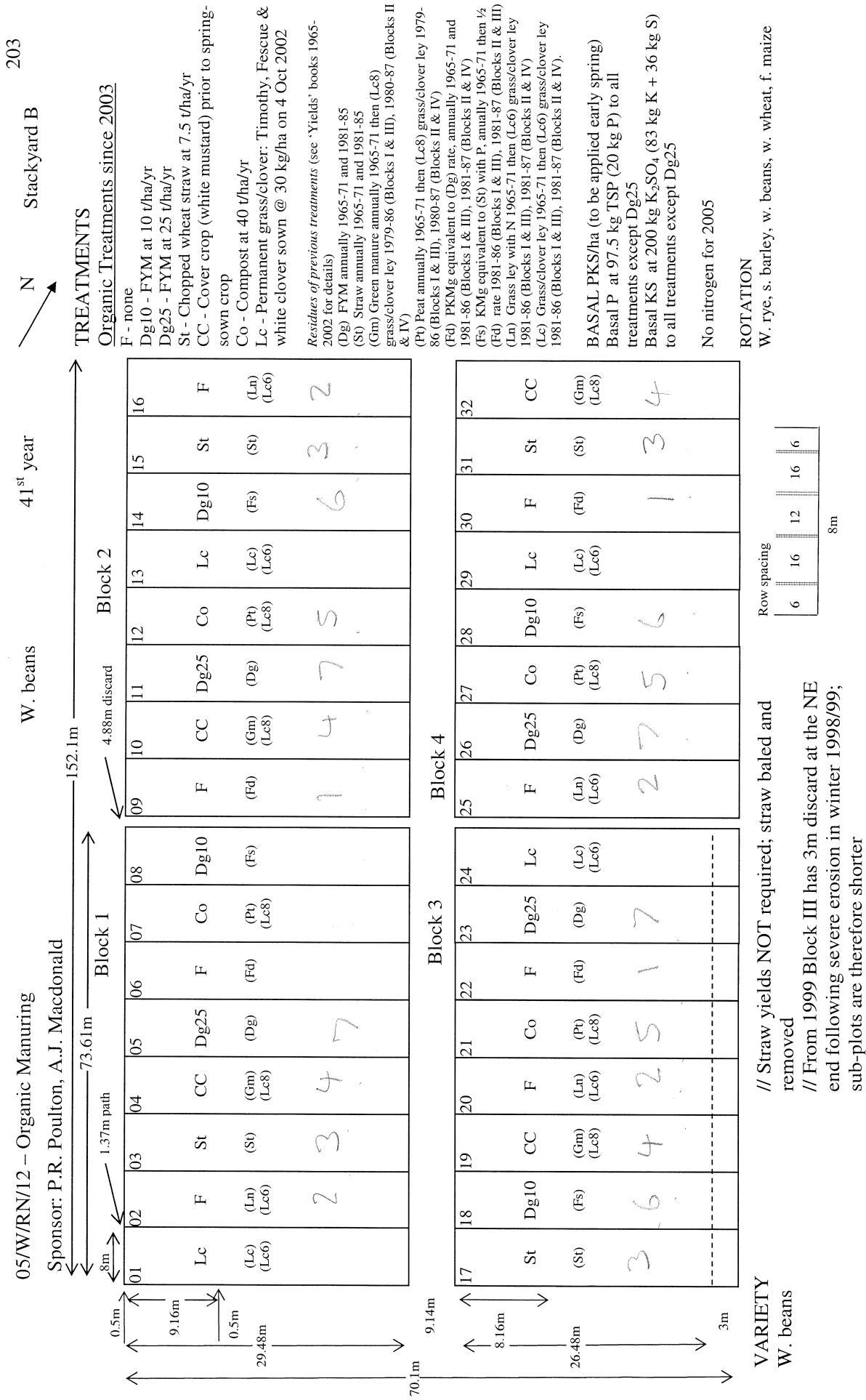
ROTHAMSTED
RESEARCH

Collection of Plans for the Woburn Organic Manuring Experiment

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TABLE 1
 Annual Organic Manure Experiments

Year	Plot	Manure	Yield (t/ha)	N (kg/ha)	P (kg/ha)	K (kg/ha)
1966	1	0	1.2	15	10	20
1966	2	10	1.5	20	15	25
1966	3	20	1.8	25	20	30
1966	4	30	2.1	30	25	35
1966	5	40	2.4	35	30	40
1966	6	50	2.7	40	35	45
1966	7	60	3.0	45	40	50
1966	8	70	3.3	50	45	55
1966	9	80	3.6	55	50	60
1966	10	90	3.9	60	55	65
1966	11	100	4.2	65	60	70
1966	12	110	4.5	70	65	75
1966	13	120	4.8	75	70	80
1966	14	130	5.1	80	75	85
1966	15	140	5.4	85	80	90
1966	16	150	5.7	90	85	95
1966	17	160	6.0	95	90	100
1966	18	170	6.3	100	95	105
1966	19	180	6.6	105	100	110
1966	20	190	6.9	110	105	115
1966	21	200	7.2	115	110	120
1966	22	210	7.5	120	115	125
1966	23	220	7.8	125	120	130
1966	24	230	8.1	130	125	135
1966	25	240	8.4	135	130	140
1966	26	250	8.7	140	135	145
1966	27	260	9.0	145	140	150
1966	28	270	9.3	150	145	155
1966	29	280	9.6	155	150	160
1966	30	290	9.9	160	155	165
1966	31	300	10.2	165	160	170
1966	32	310	10.5	170	165	175
1966	33	320	10.8	175	170	180
1966	34	330	11.1	180	175	185
1966	35	340	11.4	185	180	190
1966	36	350	11.7	190	185	195
1966	37	360	12.0	195	190	200
1966	38	370	12.3	200	195	205
1966	39	380	12.6	205	200	210
1966	40	390	12.9	210	205	215
1966	41	400	13.2	215	210	220
1966	42	410	13.5	220	215	225
1966	43	420	13.8	225	220	230
1966	44	430	14.1	230	225	235
1966	45	440	14.4	235	230	240
1966	46	450	14.7	240	235	245
1966	47	460	15.0	245	240	250
1966	48	470	15.3	250	245	255
1966	49	480	15.6	255	250	260
1966	50	490	15.9	260	255	265
1966	51	500	16.2	265	260	270
1966	52	510	16.5	270	265	275
1966	53	520	16.8	275	270	280
1966	54	530	17.1	280	275	285
1966	55	540	17.4	285	280	290
1966	56	550	17.7	290	285	295
1966	57	560	18.0	295	290	300
1966	58	570	18.3	300	295	305
1966	59	580	18.6	305	300	310
1966	60	590	18.9	310	305	315
1966	61	600	19.2	315	310	320
1966	62	610	19.5	320	315	325
1966	63	620	19.8	325	320	330
1966	64	630	20.1	330	325	335
1966	65	640	20.4	335	330	340
1966	66	650	20.7	340	335	345
1966	67	660	21.0	345	340	350
1966	68	670	21.3	350	345	355
1966	69	680	21.6	355	350	360
1966	70	690	21.9	360	355	365
1966	71	700	22.2	365	360	370
1966	72	710	22.5	370	365	375
1966	73	720	22.8	375	370	380
1966	74	730	23.1	380	375	385
1966	75	740	23.4	385	380	390
1966	76	750	23.7	390	385	395
1966	77	760	24.0	395	390	400
1966	78	770	24.3	400	395	405
1966	79	780	24.6	405	400	410
1966	80	790	24.9	410	405	415
1966	81	800	25.2	415	410	420
1966	82	810	25.5	420	415	425
1966	83	820	25.8	425	420	430
1966	84	830	26.1	430	425	435
1966	85	840	26.4	435	430	440
1966	86	850	26.7	440	435	445
1966	87	860	27.0	445	440	450
1966	88	870	27.3	450	445	455
1966	89	880	27.6	455	450	460
1966	90	890	27.9	460	455	465
1966	91	900	28.2	465	460	470
1966	92	910	28.5	470	465	475
1966	93	920	28.8	475	470	480
1966	94	930	29.1	480	475	485
1966	95	940	29.4	485	480	490
1966	96	950	29.7	490	485	495
1966	97	960	30.0	495	490	500
1966	98	970	30.3	500	495	505
1966	99	980	30.6	505	500	510
1966	100	990	30.9	510	505	515
1966	101	1000	31.2	515	510	520
1966	102	1010	31.5	520	515	525
1966	103	1020	31.8	525	520	530
1966	104	1030	32.1	530	525	535
1966	105	1040	32.4	535	530	540
1966	106	1050	32.7	540	535	545
1966	107	1060	33.0	545	540	550
1966	108	1070	33.3	550	545	555
1966	109	1080	33.6	555	550	560
1966	110	1090	33.9	560	555	565
1966	111	1100	34.2	565	560	570
1966	112	1110	34.5	570	565	575
1966	113	1120	34.8	575	570	580
1966	114	1130	35.1	580	575	585
1966	115	1140	35.4	585	580	590
1966	116	1150	35.7	590	585	595
1966	117	1160	36.0	595	590	600
1966	118	1170	36.3	600	595	605
1966	119	1180	36.6	605	600	610
1966	120	1190	36.9	610	605	615
1966	121	1200	37.2	615	610	620
1966	122	1210	37.5	620	615	625
1966	123	1220	37.8	625	620	630
1966	124	1230	38.1	630	625	635
1966	125	1240	38.4	635	630	640
1966	126	1250	38.7	640	635	645
1966	127	1260	39.0	645	640	650
1966	128	1270	39.3	650	645	655
1966	129	1280	39.6	655	650	660
1966	130	1290	39.9	660	655	665
1966	131	1300	40.2	665	660	670
1966	132	1310	40.5	670	665	675
1966	133	1320	40.8	675	670	680
1966	134	1330	41.1	680	675	685
1966	135	1340	41.4	685	680	690
1966	136	1350	41.7	690	685	695
1966	137	1360	42.0	695	690	700
1966	138	1370	42.3	700	695	705
1966	139	1380	42.6	705	700	710
1966	140	1390	42.9	710	705	715
1966	141	1400	43.2	715	710	720
1966	142	1410	43.5	720	715	725
1966	143	1420	43.8	725	720	730
1966	144	1430	44.1	730	725	735
1966	145	1440	44.4	735	730	740
1966	146	1450	44.7	740	735	745
1966	147	1460	45.0	745	740	750
1966	148	1470	45.3	750	745	755
1966	149	1480	45.6	755	750	760
1966	150	1490	45.9	760	755	765
1966	151	1500	46.2	765	760	770
1966	152	1510	46.5	770	765	775
1966	153	1520	46.8	775	770	780
1966	154	1530	47.1	780	775	785
1966	155	1540	47.4	785	780	790
1966	156	1550	47.7	790	785	795
1966	157	1560	48.0	795	790	800
1966	158	1570	48.3	800	795	805
1966	159	1580	48.6	805	800	810
1966	160	1590	48.9	810	805	815
1966	161	1600	49.2	815	810	820
1966	162	1610	49.5	820	815	825
1966	163	1620	49.8	825	820	830
1966	164	1630	50.1	830	825	835
1966	165	1640	50.4	835	830	840
1966	166	1650	50.7	840	835	845
1966	167	1660	51.0	845	840	850
1966	168	1670	51.3	850	845	855
1966	169	1680	51.6	855	850	860
1966	170	1690	51.9	860	855	865
1966	171	1700	52.2	865	860	870
1966	172	1710	52.5	870	865	875
1966	173	1720	52.8	875	870	880
1966	174	1730	53.1	880	875	885
1966	175	1740	53.4	885	880	890
1966	176	1750	53.7	890	885	895
1966	177	1760	54.0	895	890	900
1966	178	1770	54.3	900	895	905
1966	179	1780	54.6	905	900	910
1966	180	1790	54.9	910	905	915
1966	181	1800	55.2	915	910	920
1966	182	1810	55.5	920	915	925
1966	183	1820	55.8	925	920	930
1966	184	1830	56.1	930	925	935
1966	185	1840	56.4	935	930	940
1966	186	1850	56.7	940	935	945
1966	187	1860	57.0	945	940	950
1966	188	1870	57.3	950	945	955
1966	189	1880	57.6	955	950	960
1966	190	1890	57.9	960	955	965
1966	191	1900	58.2	965	960	970
1966	192	1910	58.5	970	965	975
1966	193	1920	58.8	975	970	980
1966	194	1930	59.1	980	975	985
1966	195	1940	59.4	985	980	990
1966	196	1950	59.7	990	985	995



/// Straw yields NOT required; straw baled and

W. wheat, Hereward tr.

@, s/m² on

From 1999 Block III has 3m discard at the NE end following severe erosion in winter 1998/99; sub-plots are therefore shorter

D.P. Yeoman, 5.9.05

TREATMENTS

Organic Treatments since 2003

F - none

Dg10 - FYM at 10 t/ha/yr

Dg25 - FYM at 25 t/ha/yr

St - Chopped wheat straw at 7.5 t/ha/yr

CC - Cover crop (white mustard) prior to spring-sown crop

Co - Compost at 40 t/ha/yr

Lc - Permanent grass/clover: Timothy, Fescue & white clover sown @ 30 kg/ha on 4 Oct 2002

Residues of previous treatments (see 'Yields' books 1965-2002 for details)

(Dg) FYM annually 1965-71 and 1981-85

(St) Straw annually 1965-71 and 1981-85

(Gm) Green manure annually 1965-71 then (Lc8)

grass/clover ley 1979-86 (Blocks I & III), 1980-87 (Blocks II & IV)

(Pt) Peat annually 1965-71 then (Lc8) grass/clover ley 1979-

86 (Blocks I & III), 1980-87 (Blocks II & IV)

(F_d) PKMg equivalent to (Dg) rate, annually 1965-71 and

1981-86 (Blocks I & III), 1981-87 (Blocks II & IV) (Fe) K α equivalent to (St) with P annually 1965-71 then 1/2

(Ff) rate 1981-86 (Blocks I & III); 1981-87 (Blocks II & III)

(Ln) Grass ley with N 1965-71 then (Lc6) grass/c

1981-86 (Blocks I & III), 1981-87 (Blocks II & IV)

(Lc) Grass/clover ley 1965-71 then (Lc6) grass/clover 1981 86 (Black) I & III 1981 87 (Black) II & IV

BASAL PKS/ha (to be applied early spring)

Basal P at 97.5 kg TSP (20 kg P) to all

treatments except Dg25

Basal KS at 200 kg K₂SO₄ (83 kg K + 36 kg S) to all treatments except Dg25

Nitrogen for 2007, /ha N0-5

0, 50, 100, 150, 200, 250 kg N/ha as Nitrochalk

split 50 kg N to the seedbed (except N0);

remainder post-emergence

CROP ROTATION

W. rye, s. barley, w. beans, w. wheat, f. maize

NITROGEN ROTATION

$$N5 > N4 > N3 > N2 > N1 > N0 > N5$$

D.P. Yeoman, 22.11.06

From 1999 Block III has 3m discard at the NE end following severe erosion in winter 1998/99; sub-plots are therefore shorter

VARIETY
W. mustard, Rivona @ 350 s/m² on 29 Sep 2006
F. maize, Hudson

Code: 2008/W/RN/12
 Title: Organic Manuring
 Field: Stackyard B

Plan 203

Sponsors:

P Poulton
 2490

A Macdonald
 2479

Treatments:

Organic Treatments since 2003

F None
 Dg10 FYM at 10 t/ha annually
 Dg25 FYM at 25 t/ha annually
 St Chopped wheat straw at 7.5 t/ha annually
 CC Cover crop (white mustard) prior to spring sown crop
 Co Compost at 40 t/ha annually
 Lc Permanent grass/clover: Timothy, Fescue & white clover sown @ 30 kg/ha, 4-Oct-2002

Basal PKS/ha (to be applied early spring)

Basal P at 97.5 kg TSP (20 kg P) to all treatments except Dg25
 Basal KS at 200 kg K2SO4 (83 kg K + 36 kg S) to all treatments except Dg25

Nitrogen for 2008 /ha N0-N5

0, 30, 60, 90, 120, 150 kg N/ha as Nitrochalk

Nitrogen rotation

N5>N4>N3>N2>N1>N0>N5

Residues of previous treatments (see 'Yields' books 1965-2002 for details)

(Dg) FYM annually 1965-71, and 1981-85
 (St) Straw annually 1965-71, and 1981-85
 (Gm) Green manure annually 1965-71, then (Lc8) grass/clover ley 1979-86 (blocks 1 & 3), 1981-87 (blocks 2 & 4)
 (Pt) Peat annually 1965-71, then (Lc8) grass/clover ley 1979-86 (blocks 1 & 3), 1980-87 (blocks 2 & 4)
 (Fd) PKMg equivalent to (Dg) rate, annually 1965-71, and 1981-86 (blocks 1 & 3), 1981-87 (blocks 2 & 4)
 (Fs) KMg equivalent to (St) with P, annually 1965-71, then half (Fd) rate 1981-86 (blocks 1 & 3), 1981-87 (blocks 2 & 4)
 (Ln) Grass ley with N 1965-71, then (Lc6) grass/clover ley 1981-86 (blocks 1 & 3), 1981-87 (blocks 2 & 4)
 (Lc) Grass /clover ley 1965-71, then (Lc6) grass/clover ley 1981-86 (blocks 1 & 3), 1981-87 (blocks 2 & 4)

Variety

W. Rye

Matador recleaned at 350 seeds/m², on 23-Oct-2007

Crop rotation

2003 W. Rye
 2004 S. Barley and Mustard
 2005 W. Beans
 2006 W. Wheat
 2007 F Maize and Mustard
 2008 W. Rye
 2009 S. Barley and Mustard
 2010 W. Beans

// From 1999 block 3 has a 3.0 m discard at the NE end following severe erosion in winter 1998-99; sub-plots are therefore shorter

203

Stackyard B

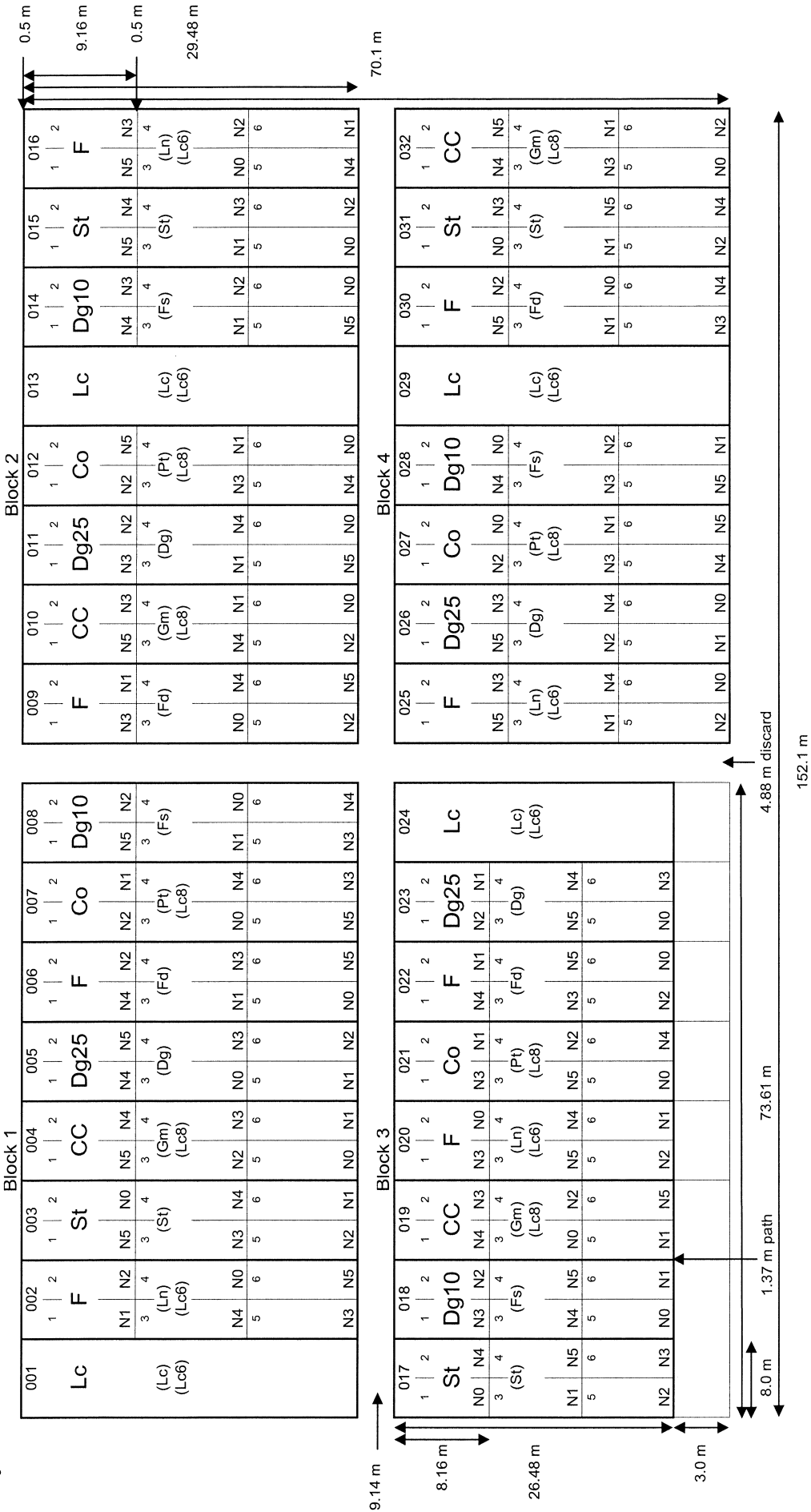
44th year

Winter Rye

Organic Manuring

2008W/RN/12

Stackyard B



Code: 2009/W/RN/12

Title: Organic Manuring

Field: Stackyard B

45th year

Plan 203

Sponsors:

P Poulton
2490

A Macdonald
2479

Treatments:

Organic Treatments since 2003

F None

Dg10 FYM at 10 t/ha annually

Dg25 FYM at 25 t/ha annually

St Chopped wheat straw at 7.5 t/ha annually

CC Cover crop (white mustard) prior to spring sown crop (sown 30-Sep-08)

Co Compost at 40 t/ha annually

Lc Permanent grass/clover: Timothy, Fescue & white clover sown @ 30 kg/ha, 4-Oct-2002

Basal PKS/ha (to be applied early spring)

Basal P at 97.5 kg TSP (20 kg P) to all treatments except Dg25

Basal KS at 200 kg K2SO4 (83 kg K + 36 kg S) to all treatments except Dg25

Nitrogen for 2009 /ha N0-N5

0, 35, 70, 105, 140, 175 kg N/ha as Nitro-Chalk 27.0% N

Nitrogen rotation

N5>N4>N3>N2>N1>N0>N5

Residues of previous treatments (see 'Yields' books 1965-2002 for details)

(Dg) FYM annually 1965-71, and 1981-85

(St) Straw annually 1965-71, and 1981-85

(Gm) Green manure annually 1965-71, then (Lc8) grass/clover ley 1979-86 (blocks 1 & 3), 1981-87 (blocks 2 & 4)

(Pt) Peat annually 1965-71, then (Lc8) grass/clover ley 1979-86 (blocks 1 & 3), 1980-87 (blocks 2 & 4)

(Fd) PKMg equivalent to (Dg) rate, annually 1965-71, and 1981-86 (blocks 1 & 3), 1981-87 (blocks 2 & 4)

(Fs) KMg equivalent to (St) with P, annually 1965-71, then half (Fd) rate 1981-86 (blocks 1 & 3), 1981-87 (blocks 2 & 4)

(Ln) Grass ley with N 1965-71, then (Lc6) grass/clover ley 1981-86 (blocks 1 & 3), 1981-87 (blocks 2 & 4)

(Lc) Grass /clover ley 1965-71, then (Lc6) grass/clover ley 1981-86 (blocks 1 & 3), 1981-87 (blocks 2 & 4)

Crop rotation

2003 W. Rye

2004 S. Barley and Mustard

2005 W. Beans

2006 W. Wheat

2007 F Maize and Mustard

2008 W. Rye

2009 S. Barley and Mustard

2010 W. Beans

Variety

Mustard: Zlata (to be sown as early as possible, Mid August)

Sp. Barley: Tipple

// From 1999 block 3 has a 3.0 m discard at the NE end following severe erosion in winter 1998-99; sub-plots are therefore shorter

// Paths widened to 1.0 m in 2009, measurements corrected and detailed on layout sheet, including reference posts

2009W/RN/12
Stackyard B

Organic Manuring

Spring Barley

45th year

Stackyard B

203

Block 1

001	Lc	002	F	003	St	004	CC	005	Dg25	006	F	007	Co	008	Dg10
	(Lc)	N0	N1	N4	N5	N4	N3	N3	N4	N3	N1	N1	N0	N4	N1
	(Lc6)	3	4	3	4	3	4	3	4	3	4	3	4	3	4
		(Ln)	(Ln)	(St)		(Gm)		(Dg)		(Fd)		(Pt)		(Fs)	
						(Lc8)						(Lc8)			
		N3	N5	N2	N3	N1	N2	N5	N2	N0	N2	N5	N3	N0	N5
		5	6	5	6	5	6	5	6	5	6	5	6	5	6
		N2	N4	N1	N0	N5	N0	N1		N5	N4	N4	N2	N2	N3

Block 2

009	F	010	CC	011	Dg25	012	Co	013	Lc	014	Dg10	015	St	016	F
	(Fd)	N0	N4	N2	N1	N1	N4		(Lc)	N3	N2	N4	N3	N4	N2
	3	4	3	4	3	4	3	4	(Lc6)	3	4	3	4	3	4
			(Gm)		(Dg)		(Pt)			(Fs)		(St)		(Ln)	
			(Lc8)				(Lc8)							(Lc6)	
		N5	N3	N0	N0	N3	N2	N0		N0	N1	N0	N2	N5	N1
		5	6	5	6	5	6	5		5	6	5	6	5	6
		N1	N4	N1	N5	N4	N5	N3		N4	N5	N5	N1	N3	N0

Block 3

017	St	018	Dg10	019	CC	020	F	021	Co	022	F	023	Dg25	024	Lc
	(St)	N5	N3	N3	N2	N2	N5	N2	N0	N3	N0	N1	N0		(Lc)
	3	4	3	4	3	4	3	4	3	4	3	4	3	4	(Lc6)
		(Fs)		(Gm)		(Ln)		(Pt)		(Fd)		(Dg)			
				(Lc8)		(Lc6)		(Lc8)							
		N0	N4	N5	N1	N4	N3	N4	N1	N2	N4	N4	N3		
		5	6	5	6	5	6	5	6	5	6	5	6		
		N1	N2	N0	N4	N1	N0	N5	N3	N1	N5	N5	N2		

Block 4

025	F	026	Dg25	027	Co	028	Dg10	029	Lc	030	F	031	St	032	CC
	(Ln)	N4	N4	N1	N1	N3	N5		(Lc)	N4	N1	N5	N2	N3	N4
	3	4	3	4	3	4	3	4	(Lc6)	3	4	3	4	3	4
			(Dg)		(Pt)		(Fs)			(Fd)		(St)		(Gm)	
			(Lc8)		(Lc8)									(Lc8)	
		N0	N3	N2	N0	N2	N1			N0	N5	N0	N4	N2	N0
		5	6	5	6	5	6			5	6	5	6	5	6
		N1	N5	N3	N4	N4	N0			N2	N3	N1	N3	N5	N1

9.14 m

7.83 m

26.49 m

1.0 m path

3.0 m

1.37 m path

73.61 m

4.88 m discard

152.1 m

1.0 m path

8.83 m

1.0 m path

29.49 m

70.1 m