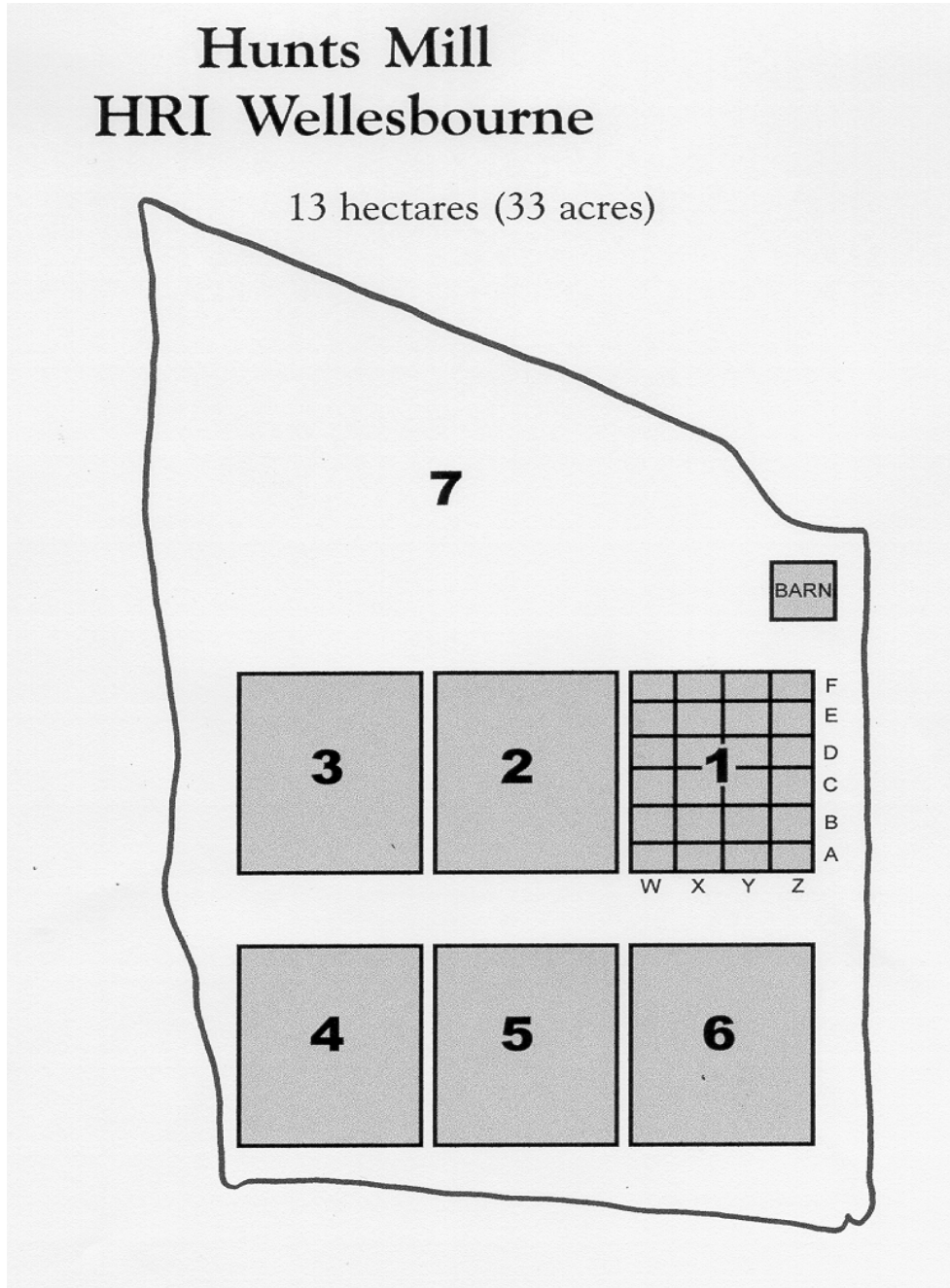


Appendix 1: Map of Hunts Mill, HRI Wellesbourne



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Appendix 2: Rotaional plan, Hunt Mill, HRI Wellesbourne

ROTATION PLAN WELLESBOURNE		YEAR 0					YEAR 1					YEAR 2					YEAR 3					YEAR 4					YEAR 5					YEAR 6																																																																	
		August'95-July'96					August'96-July'97					August'97-July'98					August'98-July'99					August'99-July'00					August'00-July'01					August'01-July'02																																																																	
		A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J
HUNTS		GRASS CLOVER LEY										WINTER BRASSICA					CARROTS					S.BARLEY					CLOVER					POTS																																																																	
MILL 1												E.POTATO					GREEN MANURE					LEEKS					u/s Clover										WB																																																												
HUNTS		GRASS CLOVER LEY										S.BARLEY					CLOVER					CARROTS/LEEKS					S. BARLEY					CLOVER					POTATOES					G.MANURE					CARR																																																		
MILL 2		" " " " " "										U/S CLOVER					" " "					ONION					G.M.					U/S CLOVER					" " " "					WINTER BRASSICA					LK																																																		
HUNTS		GRASS CLOVER LEY										WINTER WHEAT					CLOVER					S.BARLEY					CLOVER					POTATO					G.MANURE					LEEK/CARROTS					G/C																																																		
MILL 3		" " " " " "										U/S CLOVER					" " " "					U/S CLOVER					" " " "					WINTER BRASSICA					ONIONS					G.MANURE					LEY																																																		
HUNTS		CONVENTIONAL					GRASS CLOVER LEY										E.POTATO					G.MANURE					ONION					G.MANURE					S.BARLEY					CLOVER																																																							
MILL 4		CEREAL					" " " " " "										WINTER BRASSICA					LEEKS/CARROTS					U/S CLOVER																																																																						
HUNTS		CONVENTIONAL					GRASS CLOVER LEY										S.BARLEY					CARROTS/LEEKS					S.BARLEY					CLOVER					POTS																																																												
MILL 5		CEREAL					" " " " " "										U/S CLOVER					ONION					G.MANURE					U/S CLOVER					" " " "					WB																																																							
HUNTS		CONVENTIONAL					VETCH					S.BARLEY					CLOVER					CARROTS/ONIONS					S.BARLEY					POTATO					G.MANURE					LEEK/CARROTS					S.BARLEY																																																		
MILL 6		CEREAL					" " "					U/S CLOVER					" " " "					LEEKS					U/S CLOVER					WINTER BRASSICA					ONIONS					G.MANURE					U/S CLOVER																																																		

Appendix 3 Complete list of cropping sequences on each area and strip, Hunts Mill

- Area 1: 1A-Cropping sequence 1: grass/clover, grass/clover, potatoes, onions
1B-Cropping sequence 2: grass/clover, grass/clover, potatoes, carrots
1C-Cropping sequence 3: grass/clover, grass/clover, potatoes, leeks
1D-Cropping sequence 4: grass/clover, grass/clover, cabbage, onions
1E-Cropping sequence 5: grass/clover, grass/clover, cabbage, carrots
1F-Cropping sequence 6: grass/clover, grass/clover, cabbage, leeks
- Area 2 2A-Cropping sequence 7: grass/clover, barley, onions, barley
2D-Cropping sequence 7: grass/clover, barley, onions, barley
2B,2E-Cropping sequence 8: grass/clover, barley, carrots, barley
2C,2F-Cropping sequence 9: grass/clover, barley, leeks, barley
- Area 3 Cropping sequence 10: grass/clover, wheat, wheat, barley
- Area 4 4A,4B,4C-Cropping sequence 11: grass/clover, grass/clover, potatoes
4D,4E,4F-Cropping sequence 12: grass/clover, grass/clover, cabbage
- Area 5 5A,5D-Cropping sequence 13: grass/clover, barley, onions
5B,5E-Cropping sequence 14: grass/clover, barley, carrots
5C,5F-Cropping sequence 15: grass/clover, barley, leeks
- Area 6 6D-Cropping sequence 16: vetch/barley, onions, barley
6B,6F-Cropping sequence 17: vetch/barley, carrots, barley
6C,6F-Cropping sequence 18: vetch/barley, leeks, barley

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Appendix 4 : Summary of reference farms

	County	Farm Size (ha)	Area to be converted (ha)	Soil type	Type of farm	Date of conversion	Type of Conversion	Organic crops to be grown
1	Lincs. HRI Kirton	46	4	silts	intensive vegetables	Spring 1997	staged	brassicas/ potatoes/carrots
2	Lincs.	1580	12 (monitored)	silts	arable/root crops	Spring 1997	staged	brassicas/ potatoes/carrots
3	Cambs.	121	75	sandy loam/ silty loam/ peat	arable/root crops	Autumn 1997	staged	brassicas/ potatoes/ carrots/leeks
4	Warks.	30	30	medium clay loam/ heavy loam	mixed	Autumn 1997	single-step	potatoes/ brassicas/ alliums
5	N. Lincs	1943	324	sandy loam, peaty	arable/ root crops	Spring 1999	staged	potatoes/ carrots/ broccoli/beetroot
6	Cornwall	70	16	sandy loam	mixed, livestock /early veg.	Spring 1999	staged	early potatoes/ brassicas
7	Devon	40	40	red medium clay loam	dairy	Spring 1997	staged	potatoes/brassicas strawberries
8	Notts.	1215	121	light sand	arable/ root crops	Spring 1999	staged	potatoes/carrots onions
9	Lancs.	1215	9	sandy loam/ black peaty	intensive vegetables	Autumn 1998	staged	brassicas/salads/ carrots
10	Beds.	20	4	light sand	intensive vegetables	Spring 1999	staged	potatoes/ brassicas/ leeks/celery

Appendix 5: List of dissemination activities during the four years of the project

5.1 1996-1997

April 1997: Presentation to Organic Advisory Service's "Organic Horticultural Group", Hardwick, Berkshire

July 1997: Poster displays explaining conversion project at Organic Food and Farming Centre, Royal Show, Stoneleigh, Warwickshire

July 1997: Poster displays and talk at Soil Association seminar on "Converting to Organic Field Vegetable Production", Norfolk

5.2 1997-1998

September 1997: Stand at Vegetable Focus outlining the project and answering queries, HRI Kirton, Lincolnshire

November 1997: Poster display at "Organic Farming into Practice", RASE, Stoneleigh, Warwickshire

March 1998: Presentation on project to OAS advisors, Elm Farm Research Centre, Hamstead Marshall, Berkshire

March 1998: Presentation at HDRA/Elm Farm Research Centre/Soil Association event "Conversion to Organic Vegetable Production", Herefordshire

July 1998: Poster displays explaining conversion project at Organic Food and Farming Centre, Royal Show, Stoneleigh, Warwickshire

July 1998: Presentation at British Organic Farmer's "Conversion to Field-scale Organic Vegetables" event, Norfolk

5.3 1998-1999

August 1998: Posters displayed and questions answered at Soil Association event "Conversion to Organic Field Vegetables", Norfolk

October 1998: Vegex Show, Boston, Lincolnshire. Stand mounted outlining the project and questions answered

November 1998: Presentation given on the conversion project at Soil Association Conversion Seminar, Leicestershire

January 1999: Soil Association 11th National Conference on Organic Farming, Cirencester. A presentation was made and a poster was displayed for the project

February 1999: Waitrose Potato Day, Ryton Organic Gardens. February 1999. A presentation on the project was made to Waitrose suppliers

June 1999: Presentation on the conversion project to ADAS horticultural advisors and tour around Hunts Mill, HRI Wellesbourne

July 1999: Horticultural Advisors from Elm Farm Organic Advisory Service met for a training day at Ryton and were shown around the Hunts Mill site, HRI Wellesbourne

July 1999: Conversion to Field Vegetable Production Seminar at HRI Wellesbourne, July 1999, aimed at growers (60 attended). In collaboration with HRI Wellesbourne, EFRC and the SA

July 1999: Poster displays explaining conversion project at Organic Food and Farming Centre, Royal Show, Stoneleigh, Warwickshire

July 1999: Organic Advisory Service (OAS) Arable Farmers Group meeting on introducing field scale vegetables, held on one of the reference farms, Cambridgeshire. A poster display was mounted

5.4 1999-2000

August 1999: Meeting with Horticultural Development Council (HDC). Discussions were held on how the project could be disseminated to HDC members.

September 1999: Seminar presenting the conversion project and including a field walk at Hunts Mill was held for staff at HRI Wellesbourne.

October 1999: Reference farmers participating in the project were invited to a seminar at Ryton Organic Gardens and a field walk at Hunts Mill.

October 1999: Poster on the conversion project was presented at the Vegex International Conference, Warwickshire

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November 1999: A talk was given outlining the project and results to date at a Soil Association seminar "Planning the Organic Conversion" in Somerset, mainly attended by growers

January 2000: A display was presented on the conversion project at the Hortex exhibition in Telford, Shropshire

May 2000: Poster on the conversion project presented at the Lancashire Growers show, Hesketh Bank, Lancashire

June 2000: Reference farmers meeting

June 2000: Conversion to Organic Field Vegetable Production Open Day, Pollybell Farms, Lincolnshire. Attended by growers, pre-packers and journalists

June 2000: HDRA conversion team visit to ADAS Terrington to see conversion to organic arable systems

July 2000: Poster displays explaining conversion project at Organic Food and Farming Centre, Royal Show, Stoneleigh, Warwickshire

July 2000: Talk given at Soil Association "Weed Control" event, Kirton, Lincolnshire

July 2000: Poster presented on conversion project and talk given at Soil Association "Conversion to Organic Vegetable Production" in Topsham, Devon

Publications

The conversion project has been featured in the following publications:

A. Cooke (1998) Organics: conversion and commitment. *The Grower*, August 20 1998.

Anon (1998) High costs of full conversion price well worth paying. *Farmers Weekly*, April 16 1999.

E. Long (1999) Production lag as organic veg demand outstrips supply. *The Vegetable Farmer*, April 1999.

D. Shapley (1999) Large scale organic production on its way. *The Grower*, May 27 1999.

D. MacCarthy (1999) ELGRO sponsor field scale organic veg trials. *The Vegetable Farmer*, June 1999.

B. Tucker (1999) The organic route to profitability. *The Vegetable farmer* August 1999.

Anon (1999) Weed control hang-ups. In: *Farmers Weekly*, September 3 1999.

Turner R J (2000). The heat is on. *Organic Farming*. Spring 2000.

Other

The results from the conversion project have been disseminated in collaboration with the Organic Advisory Service at Elm Farm Research Centre, and used by their advisors. The findings will be incorporated in the Organic Farm Management Handbook, which is updated every second year. A new leaflet completed in June 2000, includes information about the conversion project and the HDRA web-site has been extended with research details. (www.hdra.org)

Appendix 6: Comparison of yields for the cropping seasons 1998/99 and 1999/2000, Hunts Mill

Crop	Strip	Year	Variety	Marketable yield (t/ha)	Total yield t/ha	Gradeout (%)
Potatoes	1A	1998	Remarka	26	29	10
	1B		Cara	18	27	33
	1C		Remarka	24	30	20
	4A	1999	Cara	37	41	10
	4B		Remarka	31	36	14
	4C		Cara	39	44	11
Cabbage	1D	1998	January King	1371 dozen		60
	1E		Wirosa	1593 dozen		31
	1F		Wivoy	1115 dozen		52
	4D	1999	Tundra	2765 dozen		20
	4E		Wirosa	2067 dozen		40
	4F		January King	1386 dozen		60
Onions	2A	1998	Sturon	18	18	0
	2D		Sturon	18	18	0
	6A		Sturon (inconversion)	18	19	5
	6D		Sturon (inconversion)	17	17	0
	1A	1999	Spirit	8	9	12
	1D		Sturon	14	17	18
	5A		Goldito	10	12	17
	5D		Sturon	8	11	27
Carrots	2B	1998	Narbonne	30	42	29
	2E		Newmarket	22	30	27
	6B		Berlicum 2 Berjo	46	56	18
	6E		Nairobi	42	57	26
	1B	1999	Newmarket	32	42	24
	1E		Narbonne	38	70	46
	5B		Chantenay Red Cored	30	66	53
	5E		Berlicum 2 Berjo	49	74	34
Leeks	2C	1998	Jolant/Lancelot	14	16	13
	2F		Jolant/Lancelot	16	16	0
	6C		Wintra	10	11	9
	6F		Wintra	8	9	11
	1C	1999	Jolant/Poristo	7	9	22
	1F		Jolant/Poristo	10	12	17
	5C		Wintra	10	11	9
	5F		Wintra	11	12	8

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Appendix 7: Weed control strategies on reference farms (1999/2000 season)

Farm	Crop	Weed pressure	False seed bed	Ridging	Flame weed	Brush weed	Inter-row hoe	Hand weed	Bed weed	Topping
1	Potatoes	Medium	✓	✓			✓			
2	Potatoes	Medium		✓ (2)						
5	Potatoes	High	✓ ²	✓(1-2)	✓			✓ (rogue)		
7	Potatoes	Medium		✓(2)						
W	Potatoes	Low		✓(1-2)						
1	Cabbage	Medium	✓				✓	✓		
9	Cabbage	Medium	✓				✓	Hoe & hand		
W	Cabbage	Low					✓	✓		
7	Cauliflower	Medium					✓	✓ (rogue)		
2	Calabrese	Medium	✓				✓(1-2)	✓		
3	Calabrese	High					✓ (2)	✓(hoe)		✓
5	Calabrese	High	✓				✓	✓		
1	Carrots	Medium	✓			✓ (2)		✓		
5	Carrots	High			✓	✓ (2)	✓ ¹	✓	✓	
9	Carrots	Medium						✓(hoe)		✓
W	Carrots	Low	✓		✓	✓		✓		
1	Onions	Medium	✓			✓ (2)	✓ (3)			
W	Onions	Low					✓ (2)	✓		
5	Leeks	High	✓			✓	✓ (3)	✓	✓	
W	Leeks	Low	✓				✓ (2)	✓		

Figures in brackets indicate the number of times an operation was carried out.

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Appendix 8: Physical and financial summary of Hunts Mill, HRI Wellesbourne (Averages from 1998/99 and 1999/00 cropping seasons)

	Potatoes	Cabbage	Onions	Carrots	Leeks	S. barley	S. wheat
OUTPUT							
Marketable yield (t/ha)	29	1717 doz	14	37	11	2.3	2.8
Gradeout (%)	17	44	12	34	8	31	11
Price per tonne ¹ (£)	311	5.26 doz	398	400	1007	165	170
TOTAL (£/ha)	9094	9029	5467	14880	10941	626	716
VARIABLE COSTS (£/ha)							
Seeds/transplants	1103	585	1353	540	1723	124	134
Crop protection		7	264	1446	9		
Casual labour ²	460	1192	2052	1526	3116		
Packaging	272	380	192	699	308		
Transport	1425	1202	536	1964	1224		
Other	65	92	121	85	143	9	13
TOTAL (£/ha)	3325	3458	4518	6260	6523	133	147
GROSS MARGIN (£/ha)	5769	5571	949	8620	4418	493	569
ALLOCATED FIXED COSTS ³ (£/ha)							
Cultivations	89	137	123	123	108	102	71
Planting	84	635	64	42	358	47	48
Weeding	36	40	75	136	60		115
Harvest	479		479	599		109	
TOTAL (£/ha)	688	812	741	862	526	258	234
NET MARGIN (£/ha)	5081	4759	208	7758	3892	235	335

¹All crops sold net of market commission ²Casual labour rate £4.75/hour ³Mechanical harvesting and allocated fixed costs assumed at contractor's rates

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Appendix 9: Physical and financial summary from reference farms for 1999/00 cropping seasons

	Beetroot ¹	Calabrese ¹	Carrots ¹	Potatoes ¹
OUTPUT				
Marketable yield (t/ha)	14	3.6	43	24
Price per tonne ² (£)	250	919	200	227
TOTAL (£/ha)	3450	3276	8584	5372
VARIABLE COSTS (£/ha)				
Seeds/transplants	237	528	548	1006
Fertilisers	63	38	38	27
Crop protection	43	130	84	187
Casual labour	593	669	3364	28
Other	16	178	29	64
TOTAL (£/ha)	952	1543	4063	1312
GROSS MARGIN (£/ha)	2498	1733	4521	4060
ALLOCATED FIXED COSTS (£/ha)				
Cultivations	151	170	202	209
Planting	39	288	37	146
Weeding	150	86	145	219
Mechanical Harvest	389		486	430
Other	164	204	214	131
TOTAL (£/ha)	893	748	1084	1135
NET MARGIN (£/ha)	1605	985	3437	2925

¹Weighted averages according to area grown on 3 farms ²All crops sold net of all market charges (transport, grading, packaging, commission)

Appendix 10: Net margins from the 3 different fertility building strategies at Hunts Mill

