

RESEARCH TOPIC REVIEW: Dairy cow nutrition

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APPENDIX 1: SYSTEM INPUTS

	Source of Feed	Cropping Strategy	
1	Purchased	All grassland	Reseeded medium-term ley, Permanent pasture
2	Purchased	Rotation 1	Short term leys, medium term leys, whole crop cereals
3	Purchased	Rotation 2	Short term leys, medium term leys, whole crop cereals, energy crops
4	Home grown Purchased	Rotation 3	Short term leys, medium term leys, field beans, grain cereals
5	Home grown	Rotation 4	Short term leys, medium term leys, high energy forages, field beans, cereal grains
6	None	All grassland	Reseeded medium term leys, permanent pasture
7	None	Rotation 1	Short term leys, medium term leys, whole crop cereals
8	None	Rotation 4	Short term leys, medium term leys, high energy forages, field beans, cereal grains

Short term leys are grass/red clover

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(This Review was undertaken by IOTA under the PACA Res project OFO347, funded by Defra)

Medium term leys are grass/white clover

High energy crops are maize and fodder beet

**APPENDIX 2
 INFLUENCE OF TYPE OF SYSTEM ON CALCULATED MILK OUTPUT**

System	Amount of Compound Tonnes/cow	Yield per Cow litres	Efficiency of forage use		Stocking rate LU/ha	Milk Output litres/ha	Milk from forage litres/ha
			Herbage use	Conservation losses			
1	1.5	6,500	85	20	1.86	12,101	8,307
2	1.5	6,500	85	20	1.86	12,117	8,323
3	1.5	6,500	85	20	2.00	13,022	9,228
4	1.5	6,500	85	20	1.17	7,618	8,959
5	1.0	6,000	85	20	1.36	8,134	8,899
6	0	4,750	85	20	1.25	5,960	5,960
7	0	4,750	85	20	1.24	5,909	5,909
6	0	5,000	85	20	1.35	6,728	6,728

This is a selection of data from DEFRA 2004 to illustrate the effect of different systems on milk output. The systems, 1 - 8, are those described in appendix 2

APPENDIX 3

EFFECT OF EFFICIENCY OF FORAGE USE ON MILK OUTPUT PER HECTARE

System	Amount of Compound Tonnes/cow	Yield per Cow litres	Efficiency of forage use Herbage use	Conservation losses	Stocking rate LU/ha	Milk Output litres/ha	Milk from forage litres/ha
1	1.5	6,500	85	20	1.86	12,101	8307
1	1.5	6,500	75	30	1.57	10,178	6,385
1	1.5	6,500	65	40	1.35	8,805	5,011
3	1.5	6,500	85	20	2.00	13,022	9,228
3	1.5	6,500	75	30	1.82	11,831	8,038
3	1.5	6,500	65	40	1.65	10,733	6,939
5	1.0	6,000	85	20	1.20	7,220	7,591
5	1.0	6,000	75	30	1.09	6,557	6,489
5	1.0	6,000	65	40	1.01	6,077	5,513
6	0	4,750	85	20	1.25	5,960	5,960
6	0	4,750	75	30	1.04	4,940	4,940
6	0	4,750	65	40	0.90	4,295	4,295

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The above is a selection of data to illustrate the effects of different efficiencies of forage use on milk output in a range of different systems. The systems 1,3,5, & 6 are those described in appendix 1.

Appendix 4

SUGGESTED AREAS FOR FURTHER RESEARCH.

Further studies are required on the economics of various types of dairy systems and the conflict between profitability and sustainability.

The use of supplementary feeds with low N content to “balance” the high N content of grazed grass clover swards and their effect on reducing N excretion in organic systems.

The effect of balancing the rate of energy and nitrogen release in the rumen on reducing rumen N requirement and N excretion in the dairy cow.

The use of forages and forbs in different grazing strategies and their effect on PUFA, CLA, trace mineral and vitamin levels in milk.