Ration optimization of dairy sheep

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LIVESTOCK RESEARCH
WAGENINGEN UR

Dutch dairy sheep farming

- 40 farms, (20 organic)
- 100-500 ewes
- 550 kg/milk/ewe

Nutrition of Dutch dairy sheep

- Feeding is experience based
- There are no specific standards for dairy sheep

- Recommendations for improved protein standards are made recently

Pilot studies aims

- Evaluate recommendations on protein standards
- Dynamic Linear Modelling (DLM) on dairy sheep farms

⇒ self-adjusting model for economic optimization

Pilot study

- 16 week on-farm assessment
- Group in early lactation on 3 organic farms
- 90-140 ewes per group
- weekly flock level feeding advise by DLM

Monitoring

- Daily feed intake and milk production per ewe
- Weekly averages of milk composition
- Analyzed roughage and provided concentrate feeding values
- Weekly prices of milk, concentrate and roughage
- 4 bodyweight and condition scores of the ewes

Lambing performance 1

Group:	1	2	3
Days i-gestation	127	130	118
Condition	3.29	3.15	2.96
Days i-lact.	11	22	8
Condition	3.06	2.90	2.94

No transition problems

Sufficient condition at lactation start

Lambing performance 2

Group:	1	2	3
Average litter size	1.98	1.94	2.07
Average lamb weight (kg)	5.47	4.85	5.44

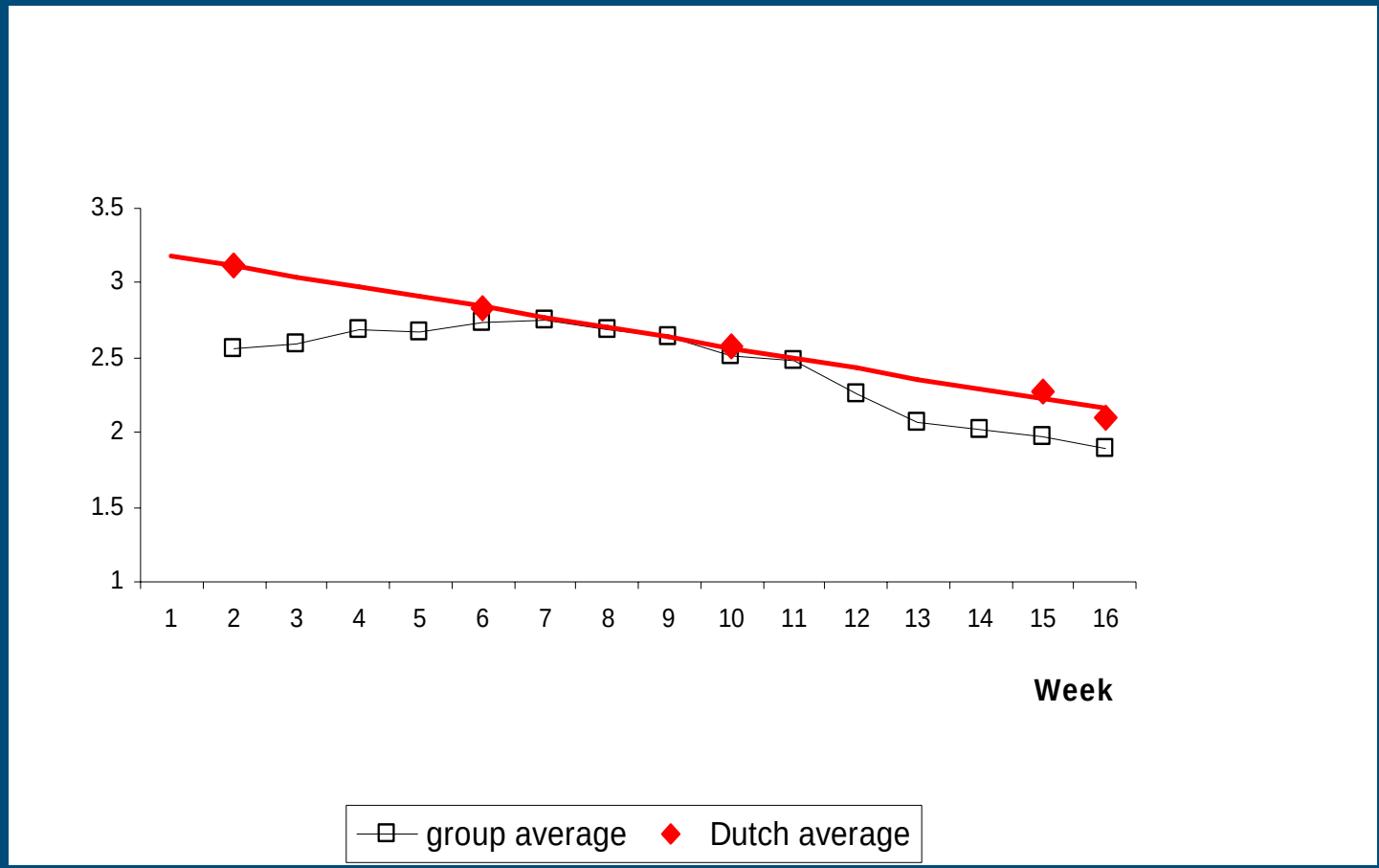
Norm ram lamb (kg) 5-6, ewe lamb (kg) 4-5

No differences in lambing performance

Results

Group	Dry matter intake Kg/d/d	Milk production	Growth Kg/d	Condition-gain
1	3.59	2.77	0.1	0.4
2	2.87	2.20	0.05	0.4
3	2.96	2.26	0.1	0.3
Average	3.14	2.41	0.08	0.4

Milk production kg/animal/day



Results

Group	Dry matter intake Kg/d/d	Milk production	DVE coverage	VEM coverage	VEM/DVE ratio	Growth Kg/d	Condition-gain
1	3.39	2.77	1.19	1.07	9.1	0.1	0.4
2	2.87	2.20	1.33	1.20	8.8	0.05	0.4
3	2.96	2.26	1.07	1.03	9.8	0.1	0.3
Average	3.14	2.41	1.20	1.10	9.2	0.08	0.4

DLM principal

- Milk production
- Feed intake = feeding saldo
- Price milk, roughages and concentrate

↓

Model =  = Model

↓

DLM advice following week = concentrate (kg/animal/day)

Week example 16 april

Group	1	2	3
Milk production	2.18	1.79	1.7
Milk price (euro)	1.55	1.36	1.21
Concentrate DM intake (kg)	2.46	1.62	0.48
Roughage DM intake (kg)	1.14	1.4	2.35
Concentrate price (euro)	0.47	0.49	0.49
Price ration (euro)	0.17	0.03	0.08
Advised concentrate by DLM (KG/day)	2.7	0.7	0
Advised concentrate on Recommended standards (kg/day)	2.7	1.4	1.2

Daily DLM saldo per animal (euro)

Group	100% DLM
1	+0.01
2	+0.06
3	+0.26
Average	+0.11

Conclusions

- Lower protein levels are acceptable
- DLM is useful for economic optimization