

Feather production responses of farmed geese to diets containing *ad libitum* fresh chopped grass

Nagy G., Mihók S. and Gyüre P.

Debrecen University, H-4015 Debrecen, Hungary

Main themes of presentation

- Basics for goose production
- Materials and methods
- Results and discussion
- Conclusions

Basics for goose production

- Goose is a multi-purpose farm animal
 - meat
 - primary product
 - fatty liver
 - feather
- } valuable additional products
- Geese can provide extra services for farmers
 - their selective grazing can be used to weed a large variety of crops
 - they can be very effective guard animals



Basics for goose production

- The digestive physiology of goose differs from that of other domestic birds
 - It may consume large amounts of high fibre feedstuffs. Reasons for it:
 - Muscular gizzard (pressure up to 275 mm Hg)
 - Microbial fermentation of fibre in the caeca and large intestine



Can digest 15-30% of acid detergent fibre,
depending on the material

Basics for goose production

- Existing goose farming systems in Europe are versatile (intensity and flock size)

intensive systems –

poultry houses; controlled microclimate;
automatic feeding and watering; feeding
based on grains/commercial concentrates;
large flocks (some thousands et least);
production target = commercial market;
high cost system

Basics for goose production

- Existing goose farming systems in Europe are versatile (intensity and flock size)

extensive systems –

out-door/range type conditions;
pasture/fibrous materials included in
feeding; both for large flocks and small
scale (backyard farm) flocks; production
target: market (nearby market)/farmers
own needs; low cost system

Basics for goose production

Goose farming is flexible regarding the intensity, flock size, nutrition systems, combination of primary and additional products → may be well suited to local conditions → goose grazing = alternative uses of grassland resources

Basics for goose production

- Recent situation of goose farming
 - in the World: China, Chile – extensive systems on rangelands
 - in Europe: particularly popular in Eastern Europe
 - Poland, Hungary, Romania (Chechia and Slovakia)
 - different systems, mostly pasture included
 - semi-natural grasslands (Poland, Hungary)
 - less-favoured areas (e.g. mountain pastures)
- (Haborstiak, 1987)

Basics for goose production

Goose feather

- Valuable commercial material → relatively high market price
- Remarkable quantities can be harvested at each moulting
- Moulting ages: 10-11 weeks, and 6-7 weeks thereafter
- 1-3 plucking/year depending on farming targets

There are different types of feather, the valuable ones are soft feathers and downs



Fine and soft: excellent at trapping heats



Used for:

- high class bedding (pillows, blankets, duvets, mattresses)
- filling winter clothes (quilted coats, sleeping bags)

Basics for goose production

Key principle for animal production:

correlations between animal nutrition and animal performance

Goose feeding research in the past

- Focused on meat and egg production
- Less attention was paid to feather production

Our hypothesis:

nutrition may have influences on the feather production of goose (quantity and quality)

Research:

feather quantity and quality investigations included in feeding trials with diets: concentrates and fresh chopped grass.

Materials and methods

Feeding trials: to investigate goose production responses

Investigations: live weight gains, carcass quality,
feather production, feather quality

Presentation: results of a trial

Trial animals: Andocs breed → broiler type, SPF

Start of trial: 4 weeks of age (after brooding period)

End of the trial: 10 weeks of age (6 weeks growing period)

In brooding period: geese raised under intensive
confinement conditions (*ad libitum* commercial
waterfowl starter)

Housing: indoor with free access to open yards



Materials and methods

Feeding trials: to investigate goose production responses

Investigations: live weight gains, carcass quality,
feather production, feather quality

Presentation: results of a trial

Trial animals: Andocs breed → broiler type, SPF

Start of trial: 4 weeks of age (after brooding period)

End of the trial: 10 weeks of age (6 weeks growing period)

In brooding period: geese raised under intensive confinement
conditions (*ad libitum* commercial waterfowl starter)

Housing: indoor with free access to open yards



Materials and methods

Treatments:

1. 100% complex grain pellet ration (CGPR) according to typical dietary nutrient level (TDNL)
2. 75% CGPR according to TDNL + *ad libitum* fress chopped grass (FCG)
3. 50% CGPR according to TDNL + *ad libitum* fress chopped grass (FCG)
4. 25% CGPR according to TDNL + *ad libitum* fress chopped grass (FCG)

Feeding: twice a day (morning, evening)

Grass: harvested before feeding

Machine: self-propelled rotary motor scythe – cut, chop, collect

Sward: consisted of valuable grass species (e.g. *Festuca*, *Poa*, *Lolium*, etc.)

Grass quality: second cut, leafy, palatable



Materials and methods

Treatments:

1. 100% complex grain pellet ration (CGPR) according to typical dietary nutrient level (TDNL)
2. 75% CGPR according to TDNL + *ad libitum* fress chopped grass (FCG)
3. 50% CGPR according to TDNL + *ad libitum* fress chopped grass (FCG)
4. 25% CGPR according to TDNL + *ad libitum* fress chopped grass (FCG)

Feeding: twice a day (morning, evening)

Grass: harvested before feeding

Machine: self-propelled rotary motor scythe – cut, chop, collect

Sward: consisted of valuable grass species (e.g. *Festuca*, *Poa*, *Lolium*, etc.)

Grass quality: second cut, leafy, palatable

Materials and methods

Number of animals: 30 per treatment

Number of animals for feather production: 10 per treatments

Feather harvest: by hand (plucking)

Individual feather production: collected, measured, packed, labelled, sent for quality investigation

Quality classification: made by a commercial company

Fractions in the quality classification:

down

mature fine feather

immature fine feather

coarse feather

sediments

} % in dry weight

Results and discussion

Feather yields per animal

Treatments	1	2	3	4	LSD _{5%}
Complex grain pellet in the ration	100	75	50	25	
Feather production g goose ⁻¹ (n=10)	96.10	85.97	79.60	65.76	8.26

Yield differences are significant except for treatments 2 to 3

Remarkable tendency: reduction in CGPR reduces feather yield per animal

Consequence: less intensive feeding may result in lower feather production

Results and discussion

Feather quality

Treatments	1	2	3	4	LSD _{5%}
Complex grain pellet in the ration	100	75	50	25	
Mean feather quality					
Down (dw%)	20.64	20.76	18.17	18.14	2.62
Mature fine feather (dw%)	52.56	48.47	50.88	50.95	6.14
Immature fine feather (dw%)	25.09	29.27	29.71	29.92	4.82
Coarse feather (dw%)	0.98	0.79	0.48	0.23	0.47
Sediments (dw%)	0.73	0.71	0.76	0.76	0.16

Remarkable tendency: no significant differences in most valuable fractions of feather (down, mature fine feather)

Consequence: intensity of feeding may have non-remarkable influence on feather quality → therefore on feather price

Conclusions

- Additional income from feather production may depend rather on feather yield than on feather quality
- Less intensive feeding may result in lower additional incomes from feather production
- Lower additional incomes may partially/totally?? be compensated by the lower production costs of grass based feeding systems (Buckland and Guy, 2002)



THANK YOU FOR YOUR ATTENTION!