Effect of maternal feed intake during mid-gestation on pig performance, meat quality and muscle fiber development

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INTRODUCTION

Increasing feed allowance during gestation has been related with changes in muscle fiber development and pig performance post-natally, affecting meat quality traits at slaughter.

OBJECTIVE

The aim of the present experiment is to study, under commercial conditions, the implications of providing a higher feed intake to the sows during mid-gestation

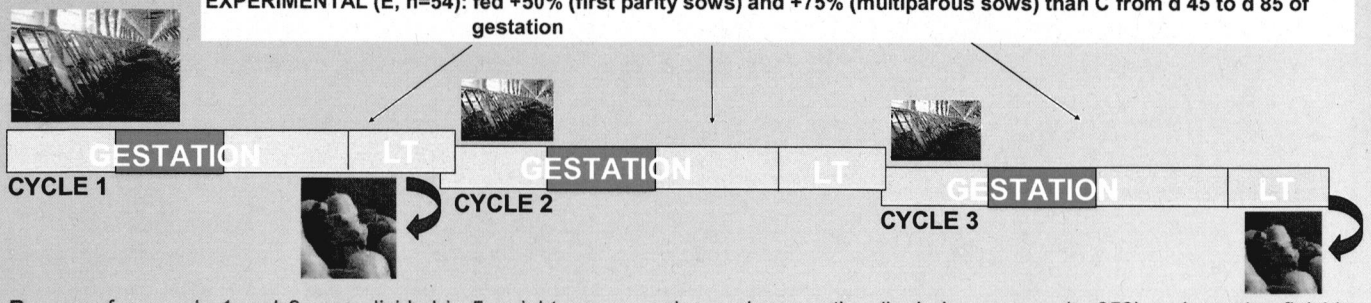
MATERIALS AND METHODS

103 sows from 1 to 5 parity

2 treatments:

CONTROL (C, n=49): fed with 3 kg/d throughout gestation (2,9 Mcal ME/kg feed and 6 g lys/ kg feed)

EXPERIMENTAL (E, n=54): fed +50% (first parity sows) and +75% (multiparous sows) than C from d 45 to d 85 of gestation



Barrows from cycle 1 and 3 were divided in 5 weight groups and reared conventionally during nursery (n=958) and growing-finishing period (n=636)

Carcass (lean meat content, main cuts weight, backfat thickness and lean depth) and meat (pH24, pH48, Minolta colour and drip lose) quality was measured (n=90)

RESULTS

GROWING PERFORMANCE: E pigs showed a better growth performance than C pigs in the nursery period, but the differences disappeared in the growing-finishing period (Tables 1 and 2).

`Table 1. Growth performance during the nursery period (cycles 1 and 3)

T	C	E	SE	*P-value*
n	**476**	**482**	-	-
Cycle 1				
ADFI, g/d	430	448	0,004	0,008
ADG, g/d	316	333	0,004	0,013
G:F	0,73	0,74	0,005	0,322
Cycle 3				
ADFI, g/d	455	455	0,006	0,962
ADG, g/d	327	333	0,005	0,316
G:F	0,72	0,74	0,005	0,038

`Table 2. Growth performance during the growing-finishing period (cycles 1 and 3)

T	C	E	SE	*P-value*
n	**317**	**319**	-	-
Cycle 1				
ADFI, g/d	1670	1630	0,041	0,518
ADG, g/d	789	774	0,012	0,390
G:F	0,47	0,48	0,005	0,627
Cycle 3				
ADFI, g/d	1970	2010	0,038	0,491
ADG, g/d	808	797	0,011	0,442
G:F	0,40	0,38	0,009	0,164

CARCASS AND MEAT QUALITY: Only pH and meat colour (L*) were affected by maternal feed intake during gestation (Tables 3 and 4)

`Table 3. Meat quality at slaughter (cycle 1)

T	C	E	SE	*P-value*
n	45	45	-	-
Carcass wt, kg	72,4	77,9	2,02	0,056
pH45				
SM[1]	6,18	6,22	0,047	0,546
LD[2]	6,17	6,30	0,051	0,079
pH24h				
SM[1]	5,53	5,62	0,029	0,045
LD[2]	5,53	5,53	0,019	0,918
Minolta				
L*	53,89	52,38	0,567	0,066
a*	5,36	5,43	0,242	0,852
b*	3,86	4,32	0,271	0,238
Drip lose, %	1,84	1,87	0,294	0,939

[1] SM: *semimembranosus* muscle, [2] LD: *longissimus dorsi* muscle

`Table 4. Meat quality at slaughter (cycle 3)

T	C	E	SE	*P-value*
n	45	45	-	-
Carcass wt, kg	87,4	86,7	2,36	0,835
pH45				
SM	6,24	6,14	0,048	0,145
LD	6,19	6,12	0,035	0,124
pH24h				
SM	5,60	5,71	0,031	0,013
LD	5,59	5,62	0,016	0,175
Minolta				
L*	51,88	49,39	0,755	0,025
a*	5,61	6,13	0,213	0,090
b*	4,47	3,98	0,227	0,135
Drip lose, %	3,58	4,19	0,383	0,271

[1] SM: *semimembranosus* muscle, [2] LD: *longissimus dorsi* muscle

CONCLUSION: The impact of an increase of feed level during mid-gestation has no clear effects on post-natal pig performance and carcass and meat quality at slaughter

FUTURE RESEARCH: Studies involving muscle fiber development (total number, secondary:primary number ratio and fibre type proportions) in LD and SM muscles are being conducted