

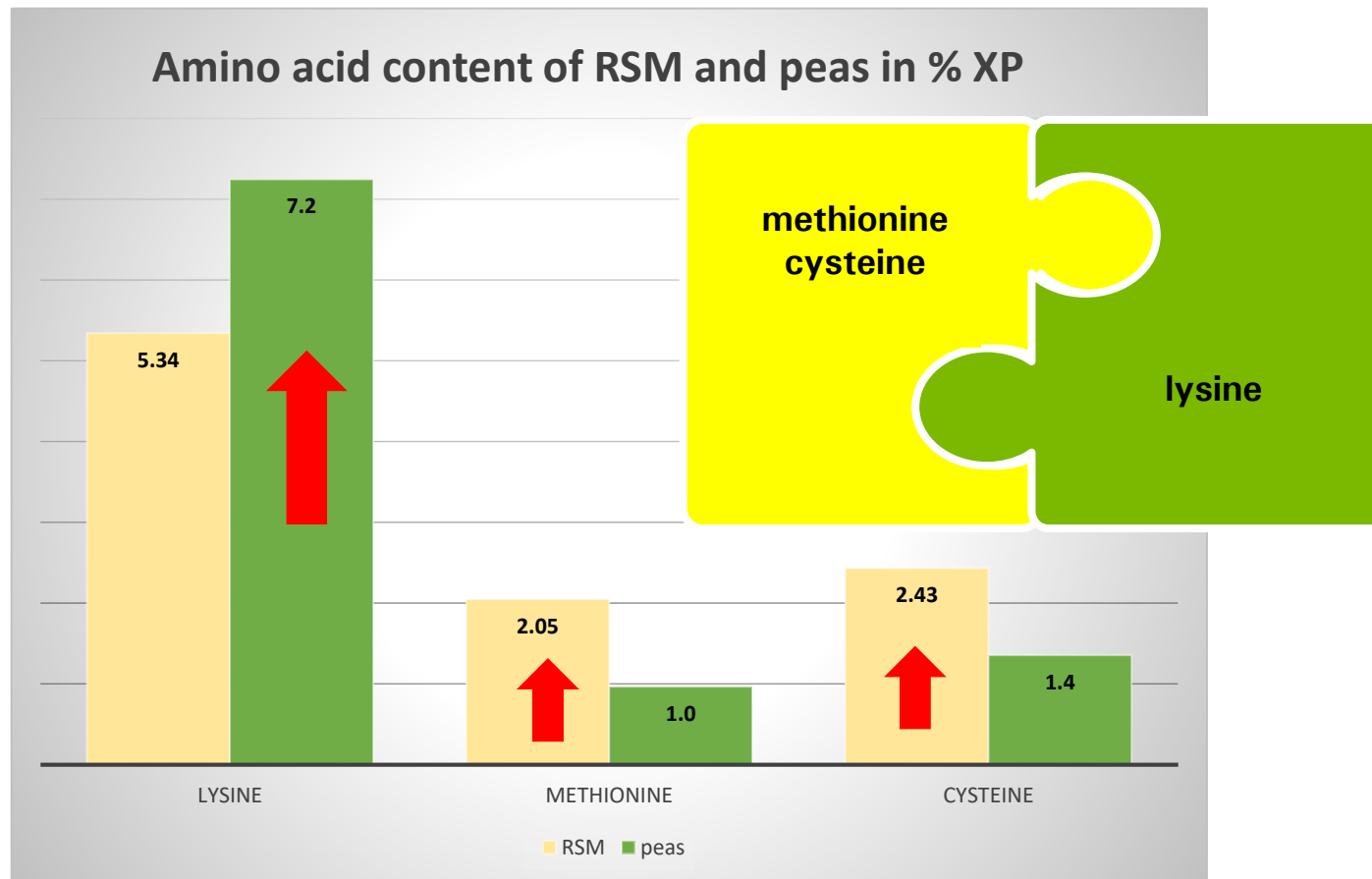
PEA AND RAPESEED MEAL IN PROTEIN REDUCED DIETS FOR BROILERS

P.N. Weindl., P.A. Weindl., G. Bellof

IRC 2019



Synergistic effects of the two feed compounds rapeseed meal (RSM) and peas in broiler diets



Materials and methods

- » 2 feeding trials with male Ross 308 day old broiler chicks
 - » trial **nr. 1**: n= 1296 (2 x 648)
 - » trial **nr. 2**: n= 1368 (2 x 684)
 - » 6 replicates / feeding group (3 within one experimental run)
- » collected parameters:
 - » feed intake
 - » body weight and final fattening weight
 - » Feed conversion rate (FCR)
 - » Losses
 - » Carcass yield (valuable parts)

Materials and methods trial nr. 1

Feeding group	Feeding phase									
	phase 1		phase 2			phase 3				
	(10 days)		(14 days)			(11 days)				
	RSM/peas	SBM	RSM	peas	SBM	RSM	peas	SBM	RSM	peas
1	0/0	36.5	--	--	28.0	--	--	22.5	--	--
2	10/0	33.5	5.00	--	21.5	10.0	--	17.0	10.0	--
3	15/0	31.5	7.50	--	19.5	15.0	--	14.5	15.0	--
4	0/10	35.5	--	5.00	25.5	--	10.0	20.0	--	10.0
5	0/20	34.0	--	10.0	23.0	--	20.0	18.0	--	20.0
6	10/10	33.0	5.00	5.00	19.5	10.0	10.0	15.0	10.0	10.0
7	10/20	31.5	5.00	10.0	17.0	10.0	20.0	12.5	10.0	20.0
8	15/10	31.0	7.50	5.00	16.5	15.0	10.0	12.5	15.0	10.0
9	15/20	29.5	7.50	10.0	14.5	15.0	20.0	10.5	15.0	20.0

Materials and methods trial nr. 2

SBM reduction
+ 5% RSM
+ 10% peas

Feeding group	Feeding phase									
	phase 1		phase 2			phase 3				
	(10 days)		(14 days)			(11 days)				
	RSM/peas	SBM	RSM	peas	SBM	RSM	peas	SBM	RSM	peas
1	C1 0/0	36.5	-	-	31.0	-	-	24.5	-	-
2	C2 0/0	31.5	-	-	26.0	-	-	19.5	-	-
3	15/0	26.5	7.5	-	16.5	15.0	-	10.5	15.0	-
4	20/0	25.0	10.0	-	13.5	20.0	-	7.50	20.0	-
5	0/20	28.5	-	10.0	20.0	-	20.0	14.0	-	20.0
6	0/30	27.0	-	15.0	17.0	-	30.0	11.0	-	30.0
7	15/20	24.0	7.5	10.0	10.5	15.0	20.0	4.50	15.0	20.0
8	20/30	21.0	10.0	15.0	4.50	20.0	30.0	-	20.0	30.0
9a	20/30	21.0	20.0	30.0	-	20.0	30.0	-	20.0	30.0
9b	20/30	-	20.0	30.0	-	20.0	30.0	-	20.0	30.0

Materials and methods

(calculated energy, protein and amino acid contents of the broiler diets)

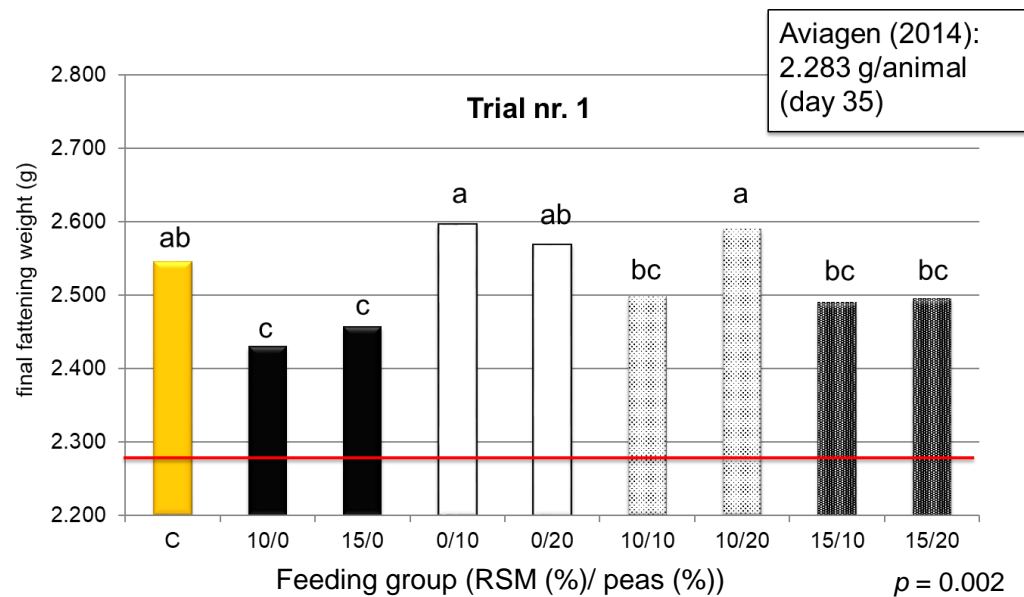
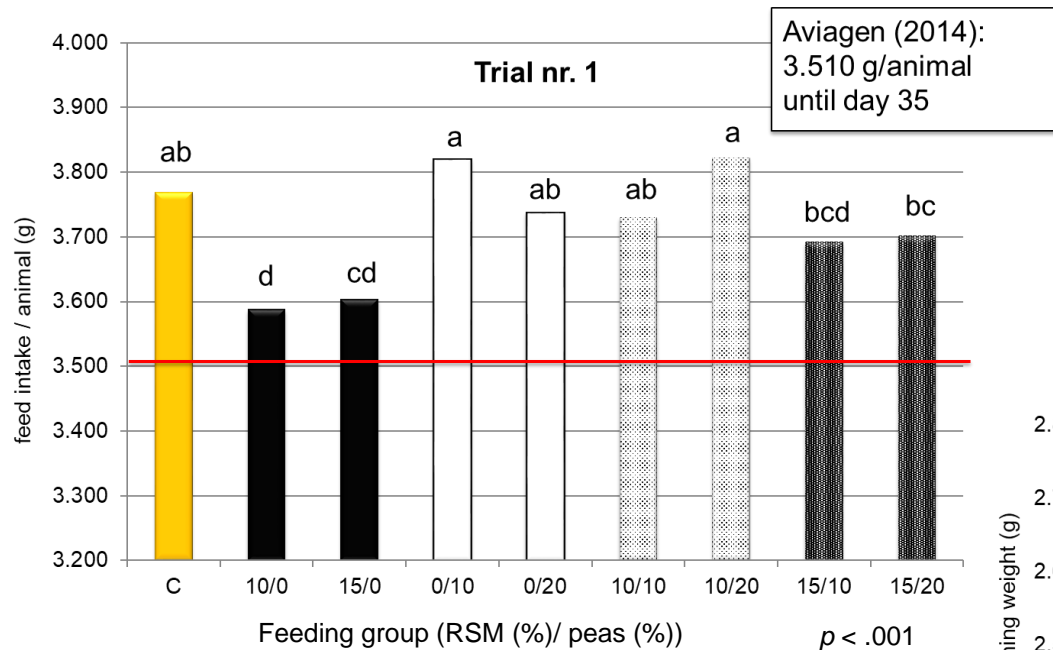
			Phase 1	Phase 2	Phase 3
Trial nr. 1	AME _N	MJ//kg	12.7	12.6	12.8
	XP	g/kg	230	204	190
	digest. lysine	g/kg	12.7	10.5	9.2
	digest. methionine	g/kg	6.5	5.0	4.5
	digest. cysteine	g/kg	2.9	3.0	2.7
	digest. threonine	g/kg	8.3	6.9	6.2
Trial nr. 2	AME _N	MJ//kg	12.2	12.3	12.7
	XP	g/kg	224	204	185
	digest. lysine	g/kg	12.5	11.2	10.0
	digest. methionine	g/kg	5.0	4.6	4.2
	digest. cysteine	g/kg	4.3	3.9	3.6
	digest. threonine	g/kg	8.4	7.5	6.7

Materials and methods

- » Further major feed components of the diets:
 - » maize, wheat
 - » rapeseed oil, coconut fat
 - » minerals
 - » amino acids
 - » trial **nr. 1**: L-lysine, DL-methionine, L-threonine
 - » trial **nr. 2**: L-lysine, DL-methionine, L-threonine
+ L-valine, L-isoleucine, L-arginine, L-leucine
- » No use of processed animal protein

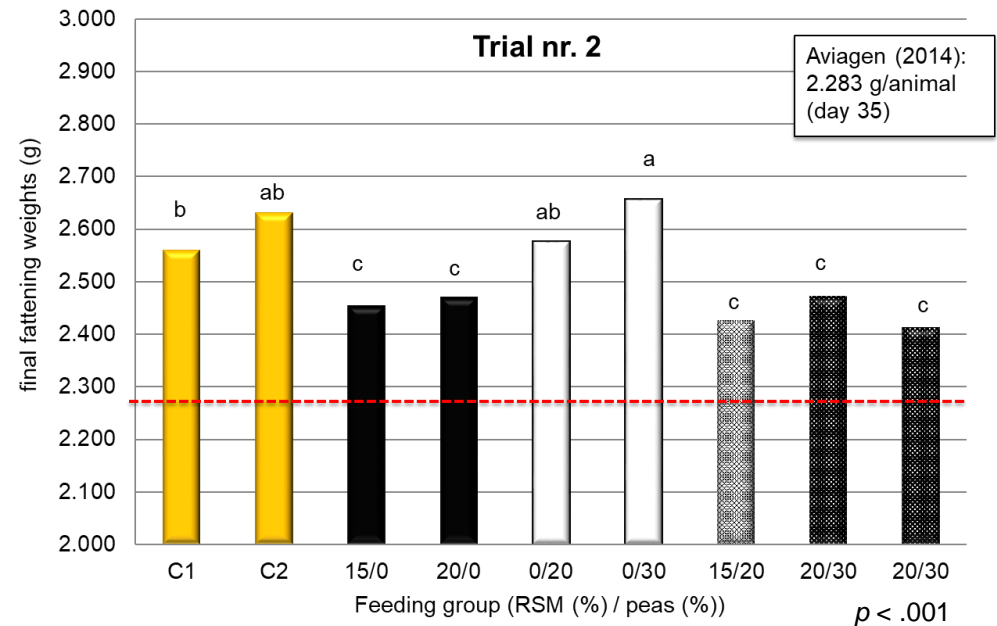
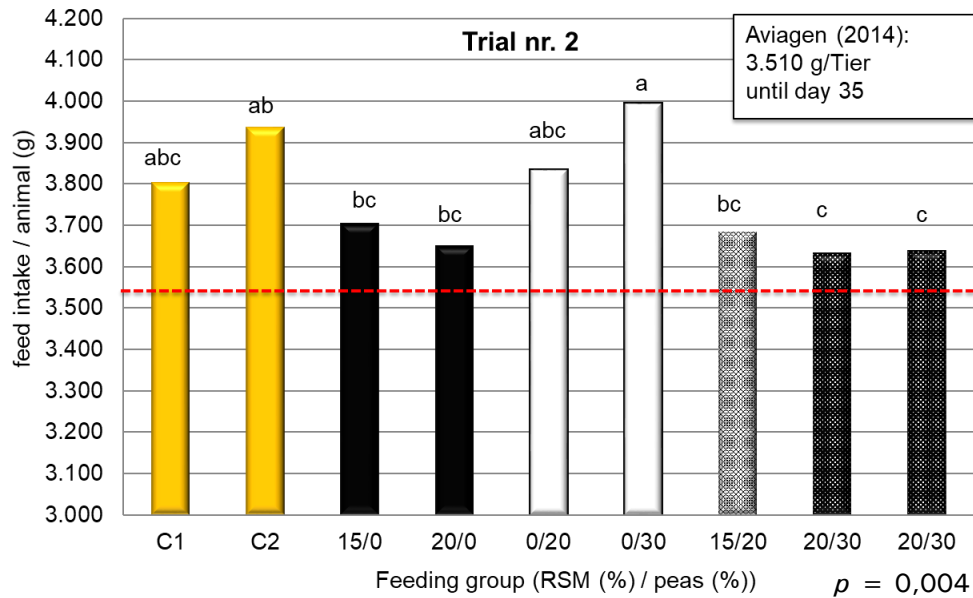
Results

(Feed intake and final fattening weights trial nr. 1)



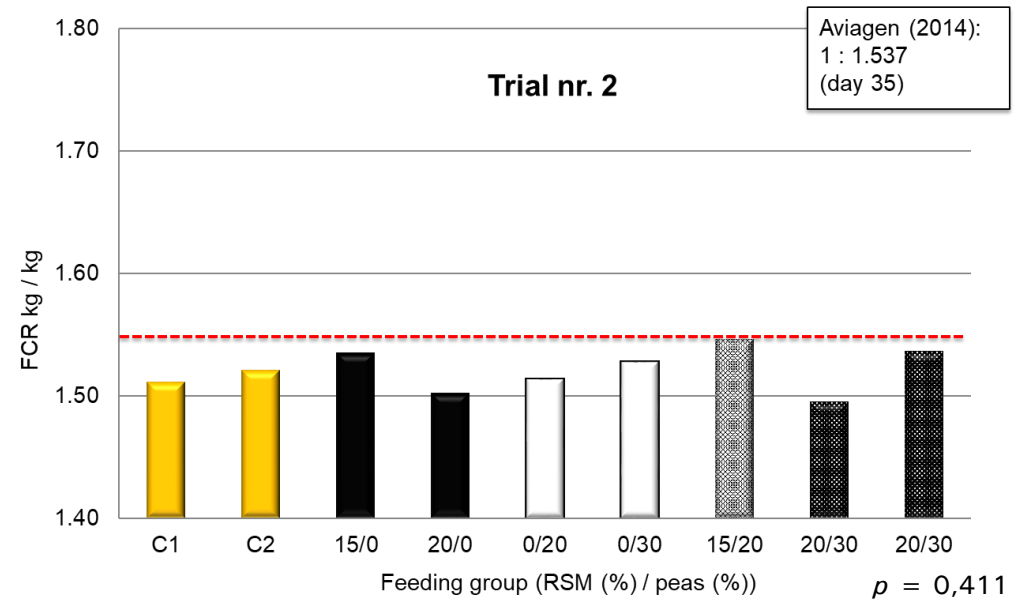
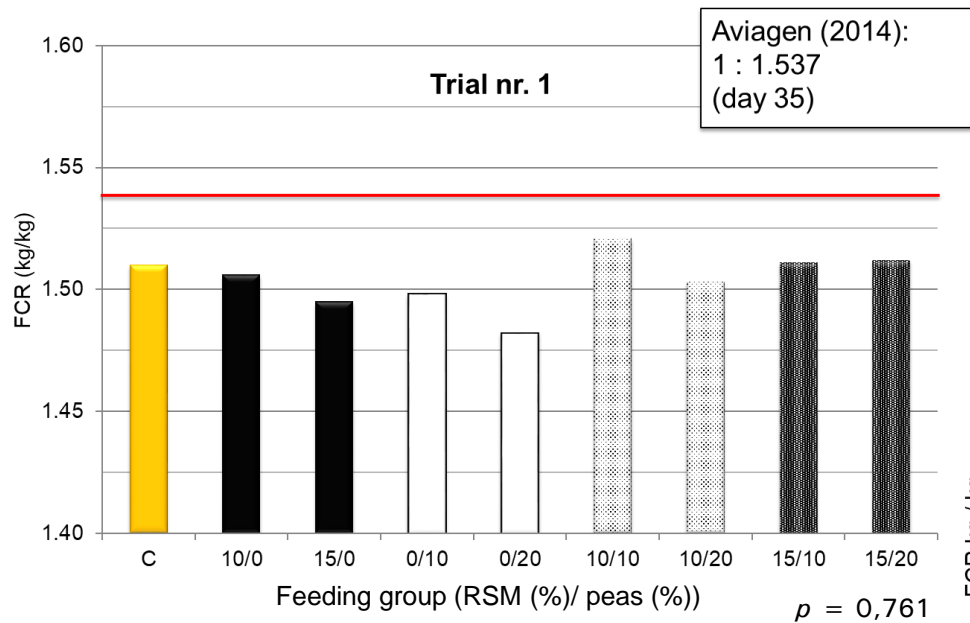
Results

(Feed intake and final fattening weights trial nr. 2)



Results

(Feed conversion rate trial nr. 1 & 2)



Results trial nr. 1 & 2

Item	Trial nr. 1										
	Feeding group (RSM (%)/peas (%))										
	1 C	2 10/0	3 15/0	4 0/10	5 0/20	6 10/10	7 10/20	8 15/10	9 15/20	<i>p</i>	
<i>Carcass weight and section portions</i>											
Cold carcass weight	g	1763 ^{ab}	1663 ^d	1664 ^d	1781 ^a	1788 ^a	1738 ^{abc}	1745 ^{abc}	1702 ^{cd}	1716 ^{cd}	<.001
Carcass yield	%	68.6	67.9	67.7	69.0	69.1	68.8	68.7	68.0	68.4	0.263
Breast proportion ¹⁾	%	29.4	29.7	30.1	29.5	30.9	29.6	29.9	29.5	29.5	0.350
Drumstick proportion	%	32.3	31.8	31.6	32.8	31.6	31.3	31.7	31.5	32.3	0.149

Item	Trial nr. 2										
	Feeding group (RSM (%) / peas (%))										
	1 C1	2 C2	3 15/0	4 20/0	5 0/20	6 0/30	7 15/20	8 20/30	9a 20/30	<i>p</i>	
<i>Carcass weight and section portions</i>											
Cold carcass weight	g	1770 ^{ab}	1849 ^a	1678 ^{cd}	1684 ^{bcd}	1751 ^{bc}	1835 ^a	1658 ^d	1688 ^{bcd}	1696 ^{bcd}	<.001
Carcass yield	%	72.4	73.3	71.7	72.0	72.6	73.0	71.8	71.9	72.3	0.101
Breast proportion ²⁾	%	31.3 ^b	33.5 ^a	31.8 ^{ab}	33.3 ^{ab}	32.9 ^{ab}	32.8 ^{ab}	32.7 ^{ab}	32.3 ^{ab}	32.4 ^{ab}	0.030
Drumstick proportion	%	29.9 ^a	28.5 ^c	29.6 ^{ab}	28.6 ^{bc}	29.3 ^{abc}	29.2 ^{abc}	29.4 ^{abc}	28.8 ^{bc}	29.5 ^{abc}	0.036

¹⁾without skin

²⁾with skin

Conclusion

- » A combination of 15% RSM and 20% peas is possible without any detrimental effects on performance (trial nr. 1)
- » RSM levels above 15% in broiler diets showed negative effects on performance (trial nr. 2)
- » High pea levels (30 %) are well tolerated by broilers and serve as a good complement for diets containing RSM
- » Protein reduced diets show no significant effects in feed intake or final fattening weights