

Performance of imported vs local soya bean meal evaluated

By Prof Rob Gous, Protein Research Foundation

An evaluation trial in which the performance of three South African soya bean meals was compared with the performance of an Argentine soya bean meal in broiler rations, was conducted independently at the University of KwaZulu-Natal in Pietermaritzburg during July 2018.

The objective of the trial was to determine whether the three local soya bean oilcake meals are of similar quality and can produce broiler performances equal to that of Molinos soya bean meal imported from Argentina.

Most of the soya bean meal that has been imported to South Africa for the last 20 years, has been produced by Molinos. The soya bean meal is regarded as very high quality, delivering excellent broiler performance.

The three South African soya bean meals were sourced from three factories that have a reputation for producing good quality soya bean meal in quantities that can satisfy a large percentage of the South African soya bean meal demand.

Materials and methods

Day-old broilers were obtained from a local hatchery (National Chicks, Umlaas Road). The broilers were sexed and vaccinated at the hatchery before being despatched to the research farm in Pietermaritzburg. The 2 880 chicks were distributed randomly to 48 floor pens in a tunnel ventilated broiler house with 60 chicks per pen, and with males and females in alternate pens throughout the house.

The four feed treatments (four soya bean oilcake meals), treatment A, B, C (Molinos Argentina) and D, were randomly distributed among the pens within each of the four blocks running the length of the house – each block contained two replications of each feed x sex treatment. The four soya bean meals were analysed for protein, fat, fibre, moisture and ash.

Processing quality of the soya bean meals used in the treatments was analysed using various methods. Results are indicated in Table 1:

Table 1: Processing quality parameters of soya bean meals used in the trial.

Treatment	A	B	C	D
TIU/mg	1,78	1,35	1,63	2,35
KOH	77,7	73,6	74,1	76,7
PDI	25,2	22,6	17,9	24,6
Lysine R	2,47	2,53	2,50	2,54
Evonik I	15	13	12	14
Urease	0,08	0,02	0,02	0,12

Proximate analysis of the soya beans was used to formulate a starter feed that contained approximately 400g soya bean oilcake/kg and a finisher feed that contained approximately 300g soya/kg, with the same calculated final feed nutrient composition. Feeds were mixed at Ukulinga Research Farm.

The starter feed was offered at 21 days of age and thereafter the finisher feed was allocated. The trial was terminated at 28 days of age. The

temperature in the house was kept at 31°C for the first two days and then reduced daily to reach 21°C by 21 days of age. The temperature was maintained at 21°C for the remainder of the trial. The lighting programme used was 12L:12D.

Birds were weighed weekly and feed consumed each week was calculated from the amount of feed allocated and the feed that remained.

The results

The analysis of the four soya bean oilcake samples indicated small differences in proximate analysis, which were compensated for in the formulations. The small differences between soya bean meals in treatment B and C resulted in similar formulations.

The processing parameters showed differences with TIU ranging from 1,35mg to 2,35mg. The Evonik processing index indicated that differences were between 15 for the least processed to twelve for the most processed soya bean meal. All soya bean meal sources used in treatments were within acceptable parameters.



Table 2: Mean body weights (g), feed intake (g) and FCR (g/g) to 28 days, males (M) and females (F).

	A		B		C		D	
Treatment					Molinos Argentina			
	M	F	M	F	M	F	M	F
28 days weight	1 700	1 471	1 719	1 488	1 668	1 463	1 696	1 463
Feed to 28 days	2 212	2 961	2 199	2 030	2 198	2 010	2 185	1 950
FCR 28 days	1,30	1,28	1,28	1,37	1,32	1,37	1,29	1,33

No significant difference between treatments.

Table 3: Treatment means males and females combined.

	A	B	Molinos	C
	Mean	Mean	Mean	Mean
28 days weight	1 587	1 604	1 566	1 580
Feed to 28 days	2 086	2 114	2 104	2 067
FCR 28 days	1,317	1,325	1,346	1,311
Mortality %	0,33	0,67	0,75	0,83

No significant difference between treatments.

As a result, there were no differences in growth, feed intake or feed conversion ratio

(FCR) between treatments at any stage during the trial (Table 2). The mortality recorded for each treatment at 28 days was less than 1% and showed no differences between treatments (Table 3).

Conclusions

The mean body weights and FCR's recorded in this trial were excellent, suggesting that the feeds

and environmental conditions were such that the broilers could achieve growth rates close to their potential.

Broilers grown on all of the locally produced soya bean oilcake performed as well as those on Molinos oilcake obtained from Argentina, confirming that the processing quality of these meals was sufficient to sustain broiler production equal to that of the imported meal.

Despite differences in processing parameters the results indicate that these differences were not large enough to have any significant effect on the performance parameters of high performing broiler chickens. 🍳

This article is an extract from the full trial report that contains more detail. Contact Prof Gous at gous@ukzn.ac.za for more information.

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