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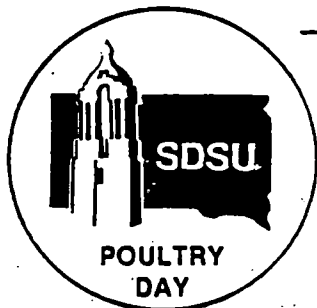
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PELLETING A CORN-SOY DIET CONTAINING WHEAT BRAN
AND THE LYSINE REQUIREMENT ON CORN-SUNFLOWER DIETS

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Pelleting rations for chickens and turkeys has been shown to increase the rate of gain and improve feed efficiency. A primary effect of pelleting is to increase the density of the feed, thus allowing greater feed intake and consequently an increase in rate of growth and efficiency of feed utilization. This effect of pelleting is very important, especially with higher fiber feeds (low density) in which the performance is limited by the amounts of feed intake. The pelleting process also has been shown to increase availability of nutrients such as starch, fat, etc. With the recent interest in sunflower meal availability, consideration of its use in turkey diets needs to be given; however, a big concern would be the calculated need for the considerable lysine supplementation.

Factorial experiments were designed to investigate the effect of forms of feeds (original mash, firm pellet and poor pellet) in corn-soybean and corn-sunflower diets and the level of lysine supplementation (100, 85 and 70% of NRC) required in corn-sunflower diets for optimum turkey performance (body, feed/gain, etc.) when high fiber was included in the diet. For the first study a total of 1200 day-old Nicholas White male poults were randomly assigned to 36 pens. The high protein dietary series of Guenther et al. (1978) were used as a model in this work. The corn-SBM diets contained 20% wheat bran but also 7% fat to provide energy. Comparable high fiber levels were present in the corn-sunflower meal diets formulated to provide 100, 85 and 70% of the NRC requirement for lysine at essentially the same energy levels. All diets were reduced from 28 to 14% protein with age. Individual weight and group feed consumption data were obtained at 4-week intervals.

A subsequent study using 750 males and females, Nicholas turkeys, was conducted with the corn-sunflower diets to ascertain the effect of pelleting with this regime using lysine at the 100% NRC levels.

Table 1 shows the average body weights from the first experiment at 12, 16 and 20 weeks of age. At no time were there significant differences ($P < .05$) in body weight among birds fed the different forms of feed. However, it appeared that birds

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fed the good pellet gained more than those on either mash or poor pellets. The lack of response to pelleting in this instance could be explained in part at least by the fat additions. At 12 and 16 weeks of age, turkeys receiving the 85 and 100% recommended levels of lysine gained significantly ($P < .05$) more than those fed the 70% lysine level. At 20 weeks of age the gain for turkeys fed the 70% lysine diets appeared to be less compared to that for the others, but was not significantly so. Turkeys fed the good pellet showed superior feed conversion compared to those on mash or poor pellets, even with the high energy levels. Level of lysine had no significant effect on feed efficiency. However, those turkeys receiving 70% lysine appeared to show the poorest feed conversion, although the performance was superior when corn-SBM diets (containing 20% WB and 7% fat) were fed. Further calculations showed that the cost of production was less with feeding the sunflower diets.

Table 2 shows the effect of forms of feed (mash vs pellet) and sex on turkey performance at 8, 12 and 16 weeks of age when corn-SFM diets were fed in the subsequent study. The results showed that turkeys fed the pelleted diets gained significantly more compared to those on mash diets irrespective of sex. The differences observed in F/G ratio by feeding different forms of feed were not significant though they appeared again to favor the pelleted feeds.

It would appear from this work that the 85% levels of lysine, with sunflower meal as the major protein supplement, would be adequate for optimum and most economical performance. There may be times when the 100% levels would be desirable. When sunflower meal is used, the diets should be pelleted for maximum performance. Whether lysine levels would be a factor in the pelleting response should be determined.

Table 1. Effect of Form of Diets on Performance of Turkeys

Treatment	Body weight (age, wks)			Feed/ gain (0-24)	Cost/ gain
	12	16	20		
	kg	kg	kg	wk	kg
<u>Corn - SBM</u>					
Mash	6.38 ^a	9.65 ^a	12.58 ^a	3.31	.77
Good pellet	6.57 ^a	9.94 ^a	13.08 ^a	3.18	.86
Poor pellet	6.40 ^a	9.70 ^a	12.77 ^a	3.22	.86
<u>Corn - SFM</u>					
100% lysine (NRC)	6.04 ^b	9.22 ^b	11.73 ^b	3.54	.72
85% lysine (NRC)	5.95 ^{b,c}	9.15 ^{b,c}	11.62 ^b	3.54	.69
70% lysine (NRC)	5.80 ^c	8.96 ^c	11.23 ^b	3.66	.68

a, b, c Means with different superscripts are significantly different (P<.05).

Table 2. Effect of Form of Feeds on Turkey Performance

Diet	Sex	Body weight (age, wk)				Feed/ gain (0-16)
		8	12	16	20	
		kg	kg	kg	kg	wk
<u>Corn - SFM</u>						
Mash	Male	2.97	5.77	9.69	11.82	2.62
Pellet	Male	3.20	5.99	9.99	12.19	2.55
Mash	Female	2.65	5.03	7.66	--	2.79
Pellet	Female	2.74	5.31	7.79	--	2.68
<u>Statistical Analysis</u>						
Feed (F)		NS	*	*	*	
Sex (S)		*	**	**		

NS = Not significant (P>.05).

* P<.05.

** P<.01, females terminated at 16 wks.