High Energy Turkey Poult Starting Rations[1]

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Day-old broad-breasted white poults, North Dakota Experiment Station strain, were wing banded and raised in electrically heated wire-floor batteries to 10 days of age. At the termination of the 10-day pre-growth period the poults were weighed individually and divided into six groups of 50 poults each, having approximately the same distribution of poults according to weight. Each group of poults was then placed in a separate pen and raised under practical brooder house conditions to 56 days of age.

Three high-efficiency type turkey poult starting rations, shown in table 1, were fed free-choice from 10 to 56 days of age. Three types of soybean oilmeal were used, each being the principal source of protein supplement in a given ration. Ration A, containing 44

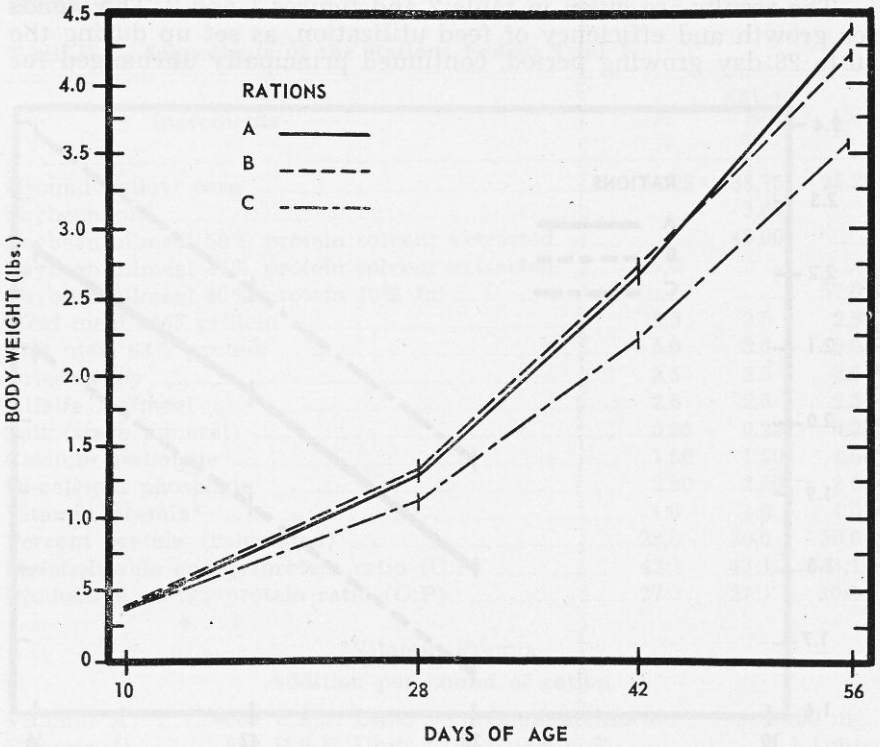

FIGURE 1.—*Poult growth data from* 10 *to* 28, 42 *and* 56 *days of age.*

[1]Progress report on Project H-14-5.
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percent protein soybean meal was calculated to be a standard, high-efficiency, 28 percent protein ration with a metabolizable energy-protein ratio of 42:1. Rations B and C, containing a 50 percent and a 40 percent protein high-fat soybean meal, respectively, were calculated to contain 30 percent protein with a metabolizable energy-protein ratio of 43:1. Comparable productive calorie-protein data are given in table 1. Each ration was fed to two pens of poults. Rations were randomly assigned to the pens.

Group weights of turkey poults were taken at 10, 28, 42 and 56 days of age. Feed consumption data were obtained on group weighing dates. Efficiency of feed utilization was determined by both growth periods and accumulatively.

Cannibalism occurred among poults in pen 1, ration B, at approximately 30 days of age. All the turkey poults in each experimental pen were debeaked. It became necessary to debeak pen 1 a second time at 42 days of age. According to the appearance and performance of the poults during the 42 to 56 day growing period, the second debeaking induced considerable stress or shock.

The results are given in table 2 and figures 1 and 2. The trends for growth and efficiency of feed utilization, as set up during the 10 to 28 day growing period, continued principally unchanged for

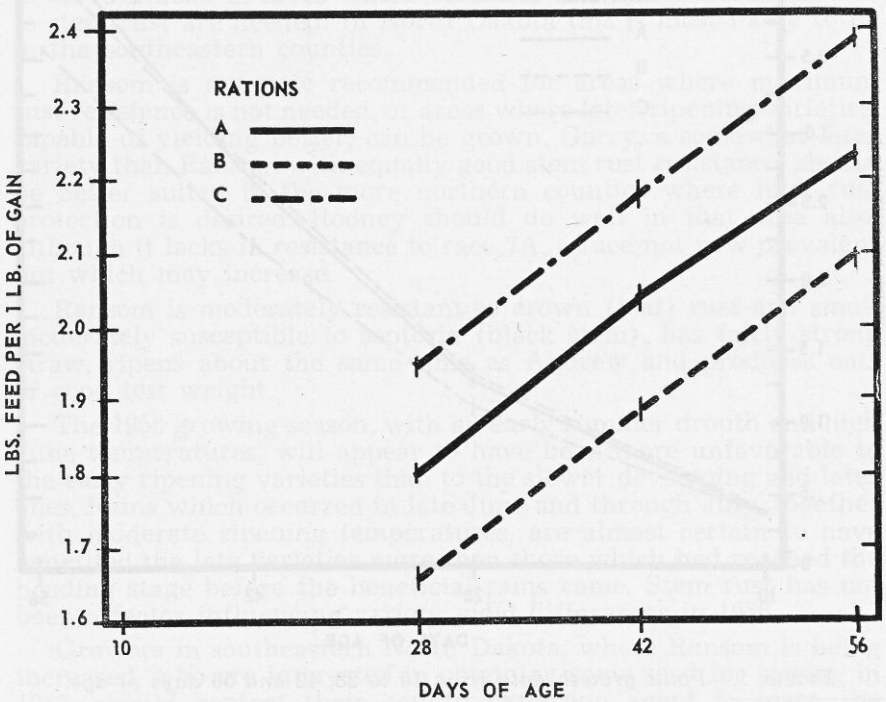

FIGURE 2.—*Accumulative feed conversion from* 10 *to* 28, 42 *and* 56 *days of age.*

the duration of the feeding trial. Ration B gave the best efficiency of feed utilization, followed in order by rations A and C. Comparing accumulative feed efficiency of rations B and C with ration A as the standard, 6.7 percent of feed was saved per unit of gain by feeding diet B and 7.6 percent more feed was consumed per unit of gain by feeding ration C. Growth of the poults fed rations A and B was practically the same, but for ration C growth was somewhat retarded.

The theoretic efficiency of feed utilization response of ration C should have equaled ration B and given a greater response than ration A. The failure of ration C to give the desired response may be of a two-fold nature: (1) The 40 percent protein meal had a distinct toasted appearance and taste and when used at levels of 50 to 60 percent of total diet the toasted condition could have rendered the meal unpalatable, affecting the total ration likewise; (2) the protein may have in some way been denatured during the manufacturing process. Since lysine is heat labile it is possible that a destruction of this amino acid and possibly others took place during the toasting process, resulting in a lowered nitrogen retention.

TABLE I.—**Ingredients of the Rations Fed in Trial 1.**

Ingredients	Ration A %	Ration B %	Ration C %
Ground yellow corn	36.25	33.75	25.25
Soybean oil		3.50	
Soybean oilmeal 50% protein solvent extracted		45.00	
Soybean oilmeal 44% protein solvent extracted	46.0		
Soybean oilmeal 40% protein 10% fat			57.0
Meat meal 55% protein	2.5	2.5	2.5
Fish meal 63% protein	5.0	5.0	5.0
Dried whey	2.5	2.5	2.5
Alfalfa leafmeal	2.5	2.5	2.5
Salt (trace mineral)	0.25	0.25	0.25
Calcium carbonate	1.50	1.50	1.50
Di-calcium phosphate	2.50	2.50	2.50
Vitamin premix*	1.0	1.0	1.0
Percent protein (calculated)	28.0	30.0	30.0
Metabolizable energy-protein ratio (C:P)	42:1	43:1	43:1
Productive energy-protein ratio (C:P)	27:1	27:1	30:1

*Vitamin Premix

Addition per pound of ration

Vitamin A	4000 U.S.P. Units	Choline chloride	300 mg.
Vitamin D_3	600 U.S.P. Units	Vitamin E	5 I Units
Riboflavin	2 mg.	Vitamin B_{12}	3 mcg.
Ca. pantothenate	5 mg.	Procaine penicillin	3 mg.
Niacin	15 mg.	$MnSO_4$	60 p.p.m.

TABLE II.—**Growth and Feed Utilization Data From Trial I.**

	Initial Starting Data 10 Day-Old Poults			Four Week-Old Data			Six Week-Old Data			Eight Week-Old Data		
	Rations			Rations			Rations			Rations		
	A	B	C	A	B	C	A	B	C	A	B	C
No poults weighed*	99	100	100	98	99	99	98	99	99	98	99	99
Mortality				1	1	1	0	0	0	0	0	0
Total body wt. lbs.	35.23	35.60	35.60	128.75	132.25	113.25	259.25	263.50	216.50	426.25	423.25	358.50
Av. body wt. lbs.	.36	.36	.36	1.31	1.33	1.14	2.64	2.66	2.19	4.35	4.27	3.62
Total body wt. gains lbs. (By wt. intervals)				93.88	97.00	78.00	130.50	131.25	103.25	167.00	159.75	142.00
Av. body wt. gains lbs. (By wt. intervals)				.96	.98	.79	1.32	1.32	1.04	1.70	1.61	1.43
Feed consumed lbs. (By wt. intervals)				167.75	159.85	152.75	288.75	269.75	244.00	424.50	376.65	384.25
Lbs. feed/lb. gain (By wt. intervals)				1.79	1.65	1.96	2.21	2.06	2.36	2.54	2.33	2.70
Accumulative body wt. gains lbs.							224.38	228.25	181.25	391.38	388.00	323.25
Accumulative feed consumption lbs.							457.50	429.60	396.75	881.00	806.25	781.00
Accumulative lbs. feed/lb. gain							2.04	1.88	2.20	2.25	2.10	2.42

*All data are based on two pens of approximately 50 poults each.

Summary

Three different high energy type turkey starting rations were fed to poults from 10 to 56 days of age. Ration A contained 28 percent protein with a metabolizable calorie-protein ratio of 42:1. Rations B and C contained 30 percent protein with a metabolizable calorie-protein ratio of 43:1. Diet B gave approximately 7 percent and 15 percent greater efficiency of feed utilization than did rations A and C, respectively.

Acknowledgements

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GROWING ECONOMY WILL INCREASE DEMAND FOR FARM PRODUCTS

Demand for farm products in this country by 1975 may be 40 to 45 percent more than in 1953, estimates the USDA. Use of livestock products is expected to increase more than use of crops.

The estimate is based on assumptions of a growing population, labor force and employment. It also assumes that the world trend is toward peace.

Figures projected to 1975 point to a need for 125 million head of cattle if there is little change in average weights and death loss of the animals. In 1955 there were 96½ million on American farms. The pig crop should increase from 95 to 130 million head, sheep from 27 to 33 million, the number of broilers by 80 percent, chickens almost 20 percent and turkeys about 50 percent.

Crop consumption might rise more than 35 percent by 1975. Food grain and potato demand will probably change slightly, but larger increases in demand are predicted for vegetables, citrus fruits, feed concentrates, fats and oils, cotton and tobacco. Feed concentrates, hay and major feed grains, including corn, oats, barley and sorghum, might expand 40 to 45 percent unless concentrates fed per livestock production unit decline.

High production in recent years has accumulated wheat, rice, cotton and feed grain surpluses, so a 40 percent increase in demand by 1975 might require a production increase of farm products of less than one third.

The figures are based on the 1953 projection for a 1975 population of 210 million.Recent estimates by the United States Census Bureau place the figure nearer 220 million, which would hike the predictions another 5 percent.

WET METHOD OF INOCULATING LEGUME SEED FOUND BEST

The wet method of inoculating legume seed has been found best by USDA. Dry inoculation has much appeal because it eliminates some extra handling of seed and inoculant. The inoculant is added directly to the dry seed in the planter or drill box. A disadvantage of this method is the rapid sifting of inoculant. Field tests on dry soybeans showed the first seeds drilled from a freshly filled planter box received more than twice their fair share of inoculant, while seeds drilled a few rounds later received only about a third of their fair proportion. Wet inoculation calls for moistening seed before adding the inoculant, or making a paste of inoculant and water and mixing it with the seed.