

FEEDING VALUE OF WALNUT MEAL FOR TURKEY POULTS

Tests reported here indicate that walnut meal may be used satisfactorily in the feed for turkey poultlets up to the 10% level.

WALNUT MEAL, a by-product of walnut processing, is obtained after oil has been removed from the walnut kernels eliminated for fresh market during grading. A representative meal contains about 13% protein, 10% fat and some 35% crude fiber. It is currently used mainly in dairy feeds but is potentially available for poultry feeding. The purpose of this project was to determine the feeding value of this material for turkey poultlets.

Basal diet

Walnut meal was included in diets for growing poultlets by substituting, for either milo or corn, in a practical type basal diet of the composition listed:

BASAL MIXTURE USED AS 60% OF DIET IN WALNUT MEAL STUDIES FOR TURKEY POULTS

| Ingredient | % |
|----------------------------|-------|
| Alfalfa meal | 4.0 |
| Ground milo | 7.14 |
| Fishmeal | 5.0 |
| Meat and bone meal | 5.0 |
| Soybean meal (50% protein) | 34.0 |
| Dried whey | 2.5 |
| CaCO ₃ | 0.25 |
| Dicalcium phosphate | 1.25 |
| DL-methionine | 0.075 |
| Salt | 0.25 |
| Trace mineral mix* | 0.036 |
| Vitamin mix† | 0.5 |

* Mineral mix contains MnSO₄·H₂O, 14.7 g; ZnO, 4.5 g; Fe citrate, 8.56 g; CuSO₄·5H₂O, 0.702 g; KI, 0.13 g and CoAc·4H₂O, 0.169 g.

† Vitamin mix contains vitamin A palmitate (10,000 IU/g), 70.4 g; vitamin D₃ (1,500 ICU/g), 117 g; vitamin E (44 IU/g), 15 g; vitamin B₁₂ (0.1% triturate), 0.528 g; riboflavin, 352 mg; niacin, 4.4 g; Ca pantothenate, 880 mg; choline·Cl (50%), 85.4 g; menadione, 116 mg; folic acid, 52.8 mg and biotin, 15 mg.

EFFECT OF BODY WEIGHT GAIN, SURVIVAL AND FEED CONVERSIONS OF TURKEY POULTS

| EXPERIMENT 1 (21 days) | | | | |
|------------------------|------------------------------------|--------------------|-----------------------|-----------------------------|
| Group | Supplement | Ave. body wt. gain | Survivors (out of 20) | Feed consumed body wt. gain |
| | | grams | no. | grams |
| 1 | 40% Ground milo | 388 | 20 | 1.86 |
| 2 | 40% Ground corn | 411 | 20 | 1.67 |
| 3 | 40% Walnut meal | 246 | 19 | 3.00 |
| EXPERIMENT 2 (28 days) | | | | |
| Group | Supplement | Ave. body wt. gain | Survivors (out of 20) | Feed consumed body wt. gain |
| | | grams | grams | no. |
| 1 | Corn control | 583 | 18 | 1.89 |
| 2 | 5% Walnut meal | 559 | 17 | 2.13 |
| 3 | 10% Walnut meal | 572 | 18 | 1.91 |
| 4 | 30% Walnut meal | 509 | 18 | 2.42 |
| 5 | 30% Walnut meal + 4.5% soybean oil | 568 | 19 | 2.11 |

Day-old poultlets were fed the experimental diets *ad libitum* for 21–28 days. Duplicate groups of 10 birds were used for each dietary treatment.

In Experiment 1 (table), the substitution of 40 per cent walnut meal reduced growth significantly. Feed consumption per body weight gain was also reduced. In the second experiment, walnut meal was used to replace corn at various increments up to 30%. Growth was not reduced (table 2) by the addition of 5 or 10% walnut meal while 30% meal did cause a 13% reduction in growth which was significantly different from the control by the "t" test. The addition of soybean oil to this walnut meal, however, to increase the energy, caused improved growth which was not different from the corn diet control. Feed consumption fig-

ures show poor efficiency of feed utilization with the 30% walnut meal and an improvement with the addition of soybean oil. This confirms the supposition that walnut meal is somewhat low in energy for growing turkeys although it has caused no growth depression at the 10% level.

Second experiment

In the second experiment, polyethylene powder was added to the diets during the last week. This material is indigestible and can be used to relate the amount of feed consumed to the amount of excrement obtained from this feed. Suitable collections of excreta were obtained and the polyethylene and energy determined in both the feed and excreta. These data indicated that Diet 1 contained 2390 Kcal metabolizable energy per kg of feed while Diet 4 with the 30% walnut meal contained 1527 Kcal metabolizable energy per kg. If it is assumed that corn contains 3417 Kcal/kg metabolizable energy as reported by the National Research Council, it can be calculated that the walnut meal would contain approximately 540 Kcal/kg metabolizable energy. This figure is much lower than would be calculated from the protein, fat and NFE content of the meal but is consistent with the feeding results.

F. H. Kratzer is Professor and Pran Vohra is Associate Professor, Department of Avian Sciences, University of California, Davis.