PIGS AND POULTRY
MOLASSES IN THE DIETS OF TROPICAL PIGS: EFFECTS OF GRADED LEVELS OF CANE MOLASSES ON THE PERFORMANCE CHARACTERISTICS AND CARCASS QUALITY OF YORKSHIRE PIGS

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Fifty weaner Yorkshire pigs of 18 kg average initial liveweight were used. They were divided into 5 equal treatment groups and fed 23% protein diets (DM basis) containing 0, 10%, 20%, 30%, and 40% cane molasses, making up treatments 1, 2, 3, 4, and 5, respectively. There were equal sex ratios (5 barrows and 5 gilts) and half of the pigs on each treatment were fed ad libitum, while the other half was fed on a semi-restricted basis, having access to feed four times per day, at 07.00, 11.00, 15.00 and 18.00 hr. They were all slaughtered when they reached approximately 64 kg liveweight, and their carcasses graded and dissected. Results showed no significant treatment differences among the means for the average daily gain (0.62, 0.71, 0.69, 0.67 and 0.66 kg respectively for treatments 1 to 5) no significant differences in the average daily feed intake (2.19, 1.85, 2.15, 2.10 and 2.01 kg, respectively) and no significant differences in the efficiency of feed utilization (3.51, 2.92, 3.15, 3.07 and 2.94 for the treatments 1 to 5, respectively). The restricted fed-pigs had significantly better efficiencies of feed utilization than those fed ad libitum, and their feed consumption figures were also significantly lower. There were no significant sex differences in any characteristic. There were no significant treatment or sex differences in carcass quality measurements, although the pigs on high levels of cane molasses tended to have better percentages of lean meat and lower percentages of fat cuts than the pigs on lower molasses diets.

The organ weights were also not significantly influenced by the levels of molasses in the diets although both the liver and kidney weights increased as the levels of molasses increased in the diets. There were no significant differences due to sex or feeding regimes in response to the graded levels of cane molasses in the diets. A rough economic appraisal showed that it is considerably cheaper to feed pigs on high molasses diets than to feed them on low molasses or molasses-free diets.

SOME NIGERIAN PROTEIN CONCENTRATES AS FOODS AND FEEDS

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The nutrients, amino acid composition and protein quality of a range of Nigerian foods and feeds have been studied in chemical and biological tests with pigs and rats. Lysine, methionine, tryptophan and, to a lesser, extent threonine were the amino acids present in the least amounts in most of the concentrates. Apparent and true digestibility of the concentrates were high except for palm kernel meal (PKM-); African locust bean (ALB) and cashewnut scrap meal (CSM). All the animal protein concentrates showed good nutritional qualities except blood meal
(BM), which, despite its high lysine content showed very poor nutritional values and supported no gain in pigs or rats probably due to its low methionine-cystine and tryptophan content, coupled with a possible isoleucine-leucine antagonism. Among the plant proteins ALB showed particularly poor values, while cashewnut food grade meal (CM) was found to be superior to soyabean meal (SM). The cashewnut scrap kernel meal (CSM) was inferior to the good grade meal. When evaluated at a critical protein level with growing pigs, it was found to be superior to groundnut meal. In practical type diets for fattening pigs, CSM diets were superior to the groundnut meal (GNM) diets, in terms of growth and efficiency of feed utilization. The PKM, despite its apparent balance of amino acids showed poor nutritional values for the rat. In a test with practical type diets, pigs on PKM grew at a significantly slower rate and had significantly poorer feed and protein efficiency ratios than the pigs on other diets. In another trial involving supplementation of PKM diets with either GNM, fishmeal (FM), BM or milk powder (MP), pigs on PKM diet supplemented with 10% GNM, had a significantly slower rate of gain and efficiency of feed conversion ratio than those on other diets containing lower quantities of PKM supplemented with other protein concentrates. Supplementation of PKM diets with FM and BM gave significantly better results than supplementation with GNC or MP.

THE LIVE BACKFAT PROBE AS A MEASURE OF LEANNESS IN PIGS

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In an earlier paper high correlations of 0.949 and + 0.812 between average carcass backfat thickness of pigs and the leanness (or fatness) of their carcasses was reported for 28 Ibadan pigs (Sofolike and Dettmers, 1973). Carcass backfat, therefore, was a good indicator of carcass quality, and it should be included among traits of selection. Since it can be measured, however, only on relatives, the usefulness of a measure of backfat thickness on the live hog as a direct measurement and substitute for that taken on the killed hog was investigated. The average live backfat probe (Hazel and Kline, 1952) on 30 pigs of about 91 kg live weight was sufficiently correlated (r = +0.66), with average carcass backfat to serve as an indicator of fatness in a pig selection program instead of the latter. Of the three single live probes, over the shoulder, midback and loin, the midback probe proved to be almost as reliable a predictor of fatness as the average probe (r = +0.61), so that this single measurement on the live animal could suffice to estimate carcass merit. The correlations of 0.66 and 0.61 were lower than those reported by other workers. This was attributed to less accuracy in actual probing due to lack of experience of the person who took the measurements.
ASSESSING THE PRODUCTIVE POTENTIALS OF LOCAL BREEDS OF PIGS, I, EFFECT OF PROTEIN LEVELS ON PERFORMANCE

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Two experiments were conducted using 160 pigs consisting of 80 local and 80 exotic pigs, to compare the protein requirements and performance on different dietary protein levels. Experiment 1 involved testing 12% and 14% protein diets, while Experiment 2 involved testing 10%, 14% and 15% protein diets. In both studies pigs were fed ad libitum and water was available at all times. In Experiment 1, the exotic pigs had significantly (P<.01) higher and more efficient gains in weight than the local pigs at both dietary protein levels. Daily feed intake of the exotic pigs was only slightly higher than those of local pigs. In Experiment 2, barrows outgained gilts, however, gilts made more efficient gains than barrows within the same dietary protein level. Increases in dietary protein level significantly (P<.05) improved daily gains in weight in the exotic pigs. In the local pigs weight gains were only improved at lower levels of dietary protein increases. The exotic pigs were increasingly more efficient in feed conversion than the local pigs as dietary protein levels increased. There were no significant differences in feed intake between the exotic and local pig. On the basis of data obtained in this study it would appear that optimum performance of local pigs could be achieved at lower dietary protein levels than with the exotic pigs. It has to be stressed, however, that no selection for fast and efficient gaining pigs has been made in the local pigs as in the exotic pigs. Consequently, a more meaningful comparison of local and exotic pigs can only be made when local pigs selected for superior performance are used. The previous environment and the genotype of the local pigs were probably responsible for their poorer performance in comparison to the exotic pigs in this study.

THE EFFECT OF PAYZONE ON GROWTH RATE AND FEED EFFICIENCY OF BROILER CHICKS

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PAYZONE, a nitrofuran, was fed in three separate trials to a total of 1,000 Anak broiler chicks housed in floor pens, to study its effect on growth rate and feed efficiency. In two of the trials, Payzone was fed at 10ppm starting from 8 or 9 weeks in a 12-week finishing period. In the other trial, Payzone was fed at the same level starting from day-old until 13 weeks. Feed consumption, average gains, efficiency of gain and average body weight were increased as a result of feeding Payzone, but these increases were significant only when Payzone feeding started from day-old stage. Birds on the treatment out-gained the control birds by an average of 494gm or 26%. This difference was equivalent to a shortening of the finishing period of 23 days. Differences in performance between treatment and control birds became noticeable early but progressively more pronounced, particularly from the tenth week to the end of the experiment. Gain-feed ratio was
maximum at the twelfth week and averaged 0.59 and 0.35 for treatment and control respectively. Mortality was 10.5% higher in the group which did not receive Payzone. Carcass, liver and pectoral muscle weights were higher for the treatment than the control, although not significantly. Payzone-treated birds, were judged equal or better in tenderness and flavour but slightly inferior in juiciness and colour than the control birds.

PRACTICAL-TYPE, RAW UNEXTRACTED SOYABEAN MEAL DIETS FOR EGG-TYPE PULLETS

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Starting at 10 weeks of age, egg type pullets were fed the following sorghum grain-base practical-type diets: 12% protein raw, unextracted soyabean with supplementary methionine (RSM+M); without supplementary methionine (RSM); and 14% protein soyabean meal (SBM). At 22 weeks of age, half the pullets on each growing diet were switched to an 18% protein layer diet containing soyabean meal (SBM) and the other half to an 18% protein diet containing raw, unextracted soyabean and supplementary methionine (SBM+M). Greatest increase in body weight was obtained by pullets fed SBM diet and lowest from those fed RSM diet (106.4 vs. 88.7%). Suplemental methionine was effective in reducing the depressing effect of raw, unextracted soyabean on growth. Both growing and laying diets had a significant effect on age at sexual maturity and hen-day rate of lay. Age at sexual maturity was 26.1, 25.1, and 24.7 weeks, respectively, for birds fed RSM, RSM+M, and SBM growing diets. Hen-day production was 56.8, 60.3 and 64.0%, respectively, for birds fed RSM, RSM+M, and SBM growing diets. Hen-day production of birds reared on RSM+M diet and switched to SBM layer diet was nearly equal to that of birds fed SBM diet during both growing and laying periods (68.8 vs. 70.3%).

DIETARY ZINC AND PROTEIN UTILIZATION BY GROWING CHICKS

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The dietary need for zinc in the diet of the growing chicken has not been defined clearly. In this study, thirty-five Rhode Island Red (RIR) and thirty-five White Plymouth Rock (WPR) chickens were selected at one month of age. The birds were fed three experimental rations containing 30, 60 and 90 p.p.m. additional zinc, respectively. The control group had no zinc oxide added to the basal ration. All the birds were kept on the floor in the brooder house until they were 10 weeks old and they were transferred to battery cages for another 5 weeks. At low

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Levels of dietary zinc, RIR pullets consumed more feed than those of the WPR breed. Feed consumption by RIR pullets decreased with increasing levels of dietary zinc and the feed:gain ratio was improved by dietary zinc. The pattern of feed consumption and feed utilisation for maintaining body weight as influenced by dietary zinc was not as clear in the WPR pullets as in RIR. However increasing levels of dietary zinc resulted in lower feed intake as well as improved feed:gain ratio by the WPR cockrels. Dietary zinc did not affect total feed intake by RIR cockrels, but it improved the utilisation of feed for increasing body weight. It would appear that zinc improves live-weight gain in young birds, but its effect is reduced progressively as the birds mature. The study of protein digestibility and zinc retention showed that both were higher when the birds were young with progressive decline as the birds mature. Thus it is clear that older broilers do not require zinc supplementation and that the amounts of this mineral present naturally in feed ingredients tend to suffice for these bird.

THE PRESENT SITUATION OF FISHMEAL IN THE WORLD AND THE FUTURE OF FISH MEAL AS PART OF A NIGERIA-BASED INDUSTRIAL FISHERY

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The present market for fishmeal in the world is characterised by a strong demand, declining supplies and record price level. The sharp drop in fish production in Peru and Chile is partly responsible for the declining supplies of fishmeal on the world market. The possibilities of substitution by competing protein products are limited, since their supplies may be equally scarce or even scarcer and their prices tend to rise even more steeply than those of fishery products. But we may not be able to exclude fishmeal from conventional livestock rations. Research efforts geared at employing underutilised raw materials in the fishery stock in fishmeal manufacture is outlined. The future of this venture appears bright to one who is convinced that the two newly-established National Fisheries Companies may be able to supply all the raw materials needed for fishmeal manufacture from their bye-catches.