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1- EFFECT OF ROYAL JELLY TYPE ON THE PERFORMANCE OF LAYING HENS AT THE END OF PRODUCTION SEASON

By

A. M. S. Hammad*

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Received:**03/11/2005** Accepted:**02/01/2006**

Abstract: *A total of 85 hens, 44 wks old, ISA brown were randomly assigned to five treatment groups (T1 to T5) and housed in six cages per treatment until 60 wks of age. Diet was formulated to have 17% CP and 2903 Kcal ME/kg. Lyophilized royal jelly (RJ) was given either in the diet (T2) at the level of 60 mg/kg diet or in drinking water (T3) at the level of 7 mg/hen/day. Frozen RJ from Egypt (T4) and China (T5) were given in drinking water at the level of 21 mg/hen/day. Control group (T1) fed the previous diet without any addition. All RJ treatments increased body weight. Eggs laid per hen were significantly (P<0.05) increased by 3.25, 3.31 and 3.57% with T2, T3 and T5 groups, respectively. Average egg weight was significantly (P<0.05) increased by 2.50% in T2 group, while decreased by 2.27 and 1.66% in T3 and T4 groups, respectively. Feed intake significantly (P<0.05) decreased by 2.25, 1.30 and 5.16% in groups received T2, T3 and T5 treatments, respectively. Feed conversion ratio was improved by 6.82, 1.82 and 8.64% with T2, T3 and T5 groups, respectively. On the other hand, feed conversion ratio of T4 group was the worst. Digestibility of CP was increased, while digestibility of EE was significantly (P<0.05) decreased by 12.49, 15.57 and 14.84% when birds received T2, T3 and T4 treatments, respectively. Digestibility of CF was significantly (P<0.05) decreased by 64.76, 61.74, 63.06 and 70.64% when birds received T2, T3, T4 and T5 treatments, respectively. ME value was significantly (P<0.05) increased by 3.68% with T5 treatment. RJ treatment in T2, T3 and T5 groups increased money return per house by 11.28, 7.00 and 18.68%, respectively. In conclusion, lyophilized RJ in diet at 60 mg/kg or drinking water at the level of 7 mg/hen/day, or Chinese frozen RJ in drinking water at the level of 21 mg/hen/day improved productive performance, body gain, CP digestibility, ME value, and economical efficiency of feed. However, Egyptian frozen RJ showed a dramatic effect on most of the measured traits.*

IMPACT OF DWARF (dw), RAPID FEATHERING (k^+) AND NAKED NECK (Na) GENES ON GROWTH AND EGG PRODUCTION PARAMETERS OF LAYING HEN CHICKENS

By

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Received: 18/10/2005 **Accepted**: 29/11/2005

Abstract*: An experiment was conducted to evaluate the impact of sex-linked dwarf (dw), sex-linked rapid feathering (k^+) and autosomal naked neck (Na) genes and all the possible gene X gene interaction on the performance of laying hens under prevailing environmental conditions of Egypt. Experimental stock comprised 400 chicks of eight genotypes; normal size-late feathering-normal feathering (Dw-K-nana), dwarf size-late feathering-normal feathering (dw-K-nana), normal size-late feathering-naked neck (Dw-K-Nana), normal size-rapid feathering-normal feathering (Dw-k^+-nana), dwarf size-late feathering-naked neck (dw-K-Nana), dwarf size-rapid feathering-normal feathering (dw-k^+-nana), normal size-rapid feathering-naked neck (Dw-k^+-Nana), and dwarf size-rapid feathering-naked neck (dw-k^+-Nana). Egg production parameters began when hens were 20 week of age and lasted at 68 week of age. They were reared under similar environmental, managerial and hygienic conditions. With respect to single gene effect, it could be noticed that the presence of dwarf (dw) gene significantly reduced body weight, body measurements, total egg number, egg weight, egg mass and feed consumption compared to normal body size. However, the dw gene had a better effect on feed conversion ratio, shell percentage and thickness. Introducing naked neck (Na) gene into normally feathered laying hens increased body weight, lengths of keel and shank, egg mass, total egg number, yolk percentage and shell quality. There were no significant differences between late feather (K-) and rapid feather and (k^+-) genotypes body weight, egg production and egg quality measurements.*

Concerning the gene X gene interaction effect, the present results showed that the incorporate of Na gene into dwarf layer hens could compensate the negative effect associated with dw gene on body weight, egg production and feed consumption. Similar trend was noticed when introducing rapid feathering gene (k^+) into dwarf birds. Conversely, there was no significant difference between rapid feathering-naked neck (Dw-k^+-Nana) and late feathering-normally feathered (Dw-K-nana) genotypes.

In conclusion, under Egyptian market conditions, where the influence of egg weight on price is small, the loss of revenue due to the reduction in egg production associated with dw gene may be slightly exceed by revenue saved from the lower feed intake and better feed efficiency. Under these conditions, the economic relevance of dw gene would enhance with saving in space and feed intake, especially in area where feed is more expensive. Also, the combination of Na gene with dw gene may enhance economic relevance because efficiency is improved and egg weight is increased relative to the normal feathered genotype.

THE EFFECT OF HETEROSIS BETWEEN FAYOUMI AND WHITE LEGHORN CHICKENS ON EGG QUALITY TRAITS UNDER DESERT CONDITIONS.

By

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Received: **16/11/2005**	Accept: **25/1/2006**

Abstract: *the egg quality performance during the laying period of an experiment F_1 populations of laying hens with Fayuomi (Fay) local breed and either White Leghorn (WL) parental genotype was evaluated. Four genetic groups of Fayoumi and White Leghorn breeds and their reciprocal crossbreds at 34 weeks of age (n= 35 females of each and three eggs/hen), were produced in this experiment. All birds were reared under desert conditions. The main purposes were to estimates the genetic and crossing effects for egg quality traits and to estimate the phenotypic correlations among egg quality traits. The result showed that White Leghorn eggs were heavier by about 6.0 g and had higher surface area by about 0.17 cm^2 than Fayoumi eggs with significant differences between them. The percentage of yolk was significantly higher by about 1.5% while that of albumen was significantly lower by about 1.8% for Fayoumi eggs as compared to White Leghorn eggs. Haugh units was lower for Fayoumi eggs (92.9) than White Leghorn eggs (94.20). The average of heterosis percentage was positive for egg shape index (0.317%), yolk height (0.78%), yolk index (1.515%), albumen percentage (1.108%), shell percentage (0.470%) and shell color (9.813%) traits, however, the effects of heterosis were significant on yolk index and albumen percentage traits. Egg weight had significantly positive correlation with each of egg width (0.83), egg length (0.73), surface area (0.99), yolk weight (0.66), albumen weight (0.96) and shell weight (0.56). The correlation coefficients of egg weight with each of shell thickness and Haugh units were very low but not significant different from zero.*

EFFECT OF CROSSING ON THE PERFORMANCE OF LOCAL STRAINS
2. ESTIMATES OF PURE LINE DIFFERENCE, DIRECT HETEROSIS, MATERNAL ADDITIVE AND DIRECT ADDITIVE EFFECTS FOR GROWTH TRAITS, VIABILITY AND SOME CARCASS TRAITS

By

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Received: 17/11/2005 **Accepted**: 08/12/2005

Abstract: *A crossbreeding experiment was carried out between two local strains of chickens [Bandara (B) and Gimmizah (G)] as well as their reciprocal crosses in El-Sabihia Research Station. A total of 10 males and 120 females were used. The results revealed that, Gimmizah chicks were heavier than Bandara and the chicks of GxB cross were heavier than those of BxG cross at all ages studied except at hatch. Crossing between G and B strains was associated with positive heterotic effects on body weight at hatch, 8 and 12 weeks of age but it was negative at the other ages. Moreover, chicks of G sires were significantly heavier than those produced from B sires at 4, 8, 12 and 16 wks of age. Using G as a sire improved growth rate (GR) at early ages, however, strain crosses were superior in growth rate over their parents. Wide variations of values and direction were found concerning heterosis of GR throughout the different ages studies. Estimates of direct additive were negative at all ages studied except that at 12-16 wks of age. The strain crosses showed superiority of viability over the parental strains at 0-4 and 4-8 wks of age. Most estimates of maternal additive and additive effects were small and negative concerning viability. The differences between live body weight at 16 weeks of age were highly significant and sex affected significantly the relative carcass weight and relative edible parts. Males and females of GxB cross achieved higher mean of live body weight compared with those of the two parental strains. Males and females of Gimmizah strain had slightly higher New York dressed percentages than those of Bandara. Female of GxB cross surpassed those of the relative New York dressed of their parents. Also, birds of GxB had higher carcass percentage than others. Concerning the percent of edible parts, females exceeded males. Additive effects had negative values for males and females in live body weight, relative New York dressed and relative carcass weight at 16 weeks of age.*

It could be concluded from these results that, Gimmizah strain was the most superior genotype for these former traits. Also results of maternal effects on live body weight at 16 weeks of age, New York dressed and edible parts leaded to the conclusion that using Bandara strain as a dam line may help to find out hybrid vigor for the previous traits studied.

CROSSBREEDING PARAMETERS OF FEMALES IN TWO LINES OF JAPANESE QUAIL FOR SOME GROWTH AND SEXUAL MATURITY TRAITS

By

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Received**: 28/11/2005** Accepted: **28/12/2005**

Abstract: *Data were obtained on a total of 761 females of straight-bred (544) and cross-bred (217), produced from two selected lines of Japanese quail (Meat line, M and Egg line, E).*

The study meant to evaluate the crossbreeding and heterotic effects for growth traits (body weight, BW; growth rate, GR and gain in weight, GW) from hatch up to 6 weeks along with some sexual maturity traits (age at sexual maturity, namely at the onset of egg production, ASM; female weight at sexual maturity, WSM and egg production during the first 20 production days, EP20).

Tests of significance revealed that the mating group (BG) affected significantly most studied growth and sexual maturity traits ($P \leq 0.0001$). Significant differences ($P \leq 0.05$) among hatches were found on all traits except BW_0 and ASM. Neither breed of dam nor of sire constituted significance on growth or sexual maturity traits investigated except BW_0 plus ASM respectively, while their interactions were generally highly significant on the studied traits ($P \leq 0.0001$). BG x Hatch interaction affected significantly most studied traits nearly as that found in hatch effect. Direct heterosis was highly significant ($P \leq 0.001$) for growth and sexual maturity traits though generally negative except ASM and WSM. Direct and maternal additive were insignificant on these traits except positive ASM ($P \leq 0.001$) for direct additive and negative ASM ($P \leq 0.01$) for maternal additive. It could be recomended to use the reciprocal recurrent selection for increasing the nicking abilities between these two lines.

RESTRICTION FRAGMENT LENGTH POLYMORPHISMS REVEAL A NEW MOLECULAR GROUP OF INFECTIOUS BURSAL DISEASE VIRUS IN SAUDI ARABIA.

By

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Received**: 5/12/2005**

Abstract: *Infectious bursal disease virus (IBDV) causes immunosuppression in chickens and high condemnations in slaughter plants. A total of 87 samples were obtained from fifteen commercial chicken flocks and nine backyard chicken flocks that have different ages and vaccination programs. The reverse transcriptase-polymerase chain reaction (RT-PCR) technique was used to detect the viruses and Restriction Fragment Length Polymorphisms (RFLP) was used to compare the RT-PCR products among the viruses that were detected. The restriction enzymes that were used in the RFLP are BstNI and MboI. All backyard flock samples were negative to IBDV. Four samples from commercial flocks were positive for IBDV using the RT-PCR and the RFLP was performed on the RT-PCR product of these samples. Two samples had RFLP bands that were different from any other known RFLP patterns and the other samples had RFLP bands that matched classical vaccine strain patterns. In conclusion, a new molecular group of IBDV may be present in Saudi Arabia that is different from any existing molecular group.*

Abbreviations: IBDV = Infectious bursal disease virus; RT-PCR = reverse transcriptase-polymerase chain reaction; RFLP = Fragment Length Polymorphisms, DMSO = dimethyl sulfoxide solution, hv = hyper-variable region, AC-ELISA = Antigen capture enzyme linked immunosorbent assay

DIRECT RESPONSE TO SELECTION INDEX FOR GROWTH TRAITS IN TURKEYS

By

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** Desert Research Center, Ministry of Agriculture.

Receive: **15/ 12/ 2005**	Accept : **30/ 01/ 2006**

Abstract: *Two lines were derived from the base population of local Black turkey stock: the selected line which has been selected for 16 week body weight and 4 –16 week body weight gain through selection indices. The control line which was obtained randomly from the same base population and reproduce each generation without selection for any trait. The results indicated that, for both selected traits, the relative increase for the selected line above the control line was lower in the first generation than the second generation for both males and females. The correlations between the index and aggregate genotype or true breeding value showed that the effectiveness of selection index is higher for males in the first than secand generation and the reverse was true for females. The expected amount of response to selection was lower than the acumulative realized or actual response for the two selected traits for both sexes during the first and second generations.*

INFLUENCE OF NAKED NECK GENE ON GROWTH PERFORMANCE AND IMMUNE RESPONSE IN CHICKEN

By

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Receive: **26/ 12/ 2005**	Accept : **13/ 02/ 2006**

Abstract: *An experiment was undertaken to evaluate the effect of naked neck (Na) gene in a single or double state on the growth performance and immune response in chickens. Two hundred and twenty (NaNa, Nana and nana) one day old chicks were used. They were reared under similar environmental, managerial and hygienic conditions from hatching to 16 weeks of age. The high and low ambient temperatures recorded during the whole experiment were 27 and 23C, respectively. The current results revealed that the Nana genotype had significantly heavier body weight compared to nana one. However, there were no significant differences between NaNa and nana genotypes for body weight. Also, The Nana genotype consumed more feed compared to nana and NaNa genotypes. The presence of Na gene in a single or double state significantly improved feed conversion ratio compared to nana sibs. With respect to cutaneous basophil hypersensitivity (CBH) response, the NaNa genotype significantly increased toe-web swelling at 48 and 72 hrs after PHA-P injection compared to Nana and nana genotypes.*

There were no significant differences among genotypes for relative weight of both spleen and thymus. However, the Nana genotype significantly increased relative bursa weight compared to both NaNa and nana genotypes. Also, the Nana genotype significantly increased hematocrit level compared to nana and NaNa genotypes.

There was no significant difference among genotypes for plasma total protein, albumen, globulin and relative weight of both gizzard and liver. Concerning the phagocytic activity, the Nana genotype had significantly lower levels of carbon in their circulation as compared to nana genotype. Opposite trend was noticed for NaNa genotype.

There was positive relationship between plasma globulin and body weight was observed in Nana genotype, but inverse and low relationships were showed in both NaNa and nana genotypes. Negatively relationship between body weight and toe-web swelling measured at all times after PHA-P injection was observed in NaNa genotype. Opposite trend was observed in nana genotype.

There was positive correlation between relative spleen weight and relative thymus weight was observed in both NaNa and Nana genotypes. Similar trend, but very low was observed in nana genotype. The relative bursa weight was negatively correlated with toe-web swelling for all genotypes at all times. There was highly significant positive relationship between toe-web swelling measured at 48h post PHA-P injection and toe-web swelling measured at 72h post PHA-P injection was observed in all genotypes.

EFFECT OF CROSSING ON THE PERFORMANCE OF LOCAL STRAINS
3. SEMEN QUALITY, ELECTROPHORETIC PATTERN OF SEMINAL PLASMA PROTEINS, FERTILITY AND HATCHABILITY IN BANDARA, GIMMIZAH AND THEIR RECIPROCAL CROSSES.

By

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Receive: **05/ 01/ 2006** Accept : **04/ 02/ 2006**

Abstract: *The present study was conducted to study the effect of crossing on semen quality using two local strains, Bandara (B), Gimmizah (G) and their reciprocal crosses. The results showed the superiority of GxB cross since it presented higher significant values of the total sperm output and the total number of motile sperm compared with pure strains. The seminal plasma constituents of GxB showed higher significant values of total protein and albumin and lower significant values of aspartate amino transaminase (AST) compared to pure strains. The heterotic effect on semen characteristics of GxB cross showed a positive values of sperm concentration, total sperm output, total motile sperm and negative values for percentage of dead sperm. Also, heterotic effect on seminal plasma constituents of GxB cross showed positive values for total protein and albumin and negative values of AST and alanine amino transaminase (ALT).*

The electrophoretic pattern of seminal plasma proteins indicated the superiority of GxB cross in which the highest densitometric value for protein band of 105 kDa was recorded. This protein band was associated with high number of motile sperm due to its capacity to neutralize the motility inhibiting property of sperm motility inhibiting factor.

The effect of crossing on fertility and hatchability percentages was not pronounced where the percentages of fertility and hatchability in pure strain did not differ significantly than that of their crosses.

EFFECT OF IMPROVING THE UTILIZATION OF WHEAT BRAN ON PRODUCTIVE AND PHYSIOLOGICAL PERFORMANCE FOR LOCAL LAYING HENS

By

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Received: **10/10/2005** Accepted: **18/12/2005**

Abstract: *A total number of 72 Matrouh laying hens (local strain) at 32 weeks of age were used to study the effect of using 50% wheat bran in the laying diets and the possibility to improve the feeding value of wheat bran (WB) when supplemented with some feed additives. Hens were housed in individual cages and were randomly divided into six equal treatments (12 birds each) and were approximately similar in their body weight. Treatment 1 birds were received the control diet contained 16% CP and 2703 kcal ME/Kg. Treatment 2 birds were received the basal wheat bran diet (WB-diet) contained 16.01% CP and 1841 Kcal ME/Kg. Birds of Treatments 3,4,5 and 6 were received the WB-diet supplemented with either 1.0% sodium sulphate (SS), 0.1% kemzyme (KE) , 1.0% (SS) plus 0.1% (KE) , or 0.1% (KE) plus 1.0% Radish extract (RE) , respectively. Birds were fed the experimental diets for three months. Results showed that WB-diet significantly reduced feed intake and numerically decreased egg number. Addition of SS or KE+RE increased egg number and egg mass compared to hens fed WB-diet alone. WB-diet increased level of calcium and phosphorus in serum while decreased cholesterol, low density lipoprotein (LDL) and high density lipoprotein (HDL) in yolk compared to hens fed control diet. It could be concluded that the detrimental effect of inclusion of 50% wheat bran in Matrouh laying hen diets can be overcome by addition of SS or KE+RE.*

THE EFFECT OF DIETARY PHOSPHORUS LEVEL WITH AND WITHOUT SUPPLEMENTAL PHYTASE OR DRIED YEAST ON THE PERFORMANCE OF DANDARAWI LAYING HENS

By

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Received: 29/10/2005 **Accepted:** 25/12/2005

Abstract: *One hundred eighty, Dandarawi laying hens were used in sixteen-week experiment (through 32-48 wks old). Birds were divided into six groups and fed experimental diets containing normal (high) nonphytate phosphorus (NPP) level (0.45%) or low-NPP level (0.25%), supplemented or not with microbial phytase (1000 U/kg of diet) or dried yeast (0.3% of the diet). Criteria of response were performance for egg production, some egg quality traits, calcium (Ca) and phosphorus (P) retention, tibia bone ash %, plasma Ca and P concentrations and economical evaluation. The obtained results showed that:*

1. ***Neither dietary P level nor supplemental phytase and yeast influenced feed intake or egg weight.***
2. ***Hens fed on 0.45%-NPP-diets performed better than those fed on 0.25%-NPP-diets for egg production and feed conversion. Dietary supplementation with phytase or dried yeast enhanced egg production in hens fed 0.25%-NPP-diets, among which hens fed 0.3%-yeast-diet only restored their egg production to be significantly similar to those fed the unsupplemented 0.45%-NPP-diet.***
3. ***Regarding egg quality traits, erratic significant differences were detected among dietary treatments only in weights of egg albumen and yolk.***
4. ***Increased Ca retention % was observed in hens fed the unsupplemented 0.45%-NPP-diet, but the opposite was true for those fed the unsupplemented 0.25%-NPP-diet. Dietary supplementation with phytase or yeast significantly increased Ca retention % only in hens fed the 0.25%-NPP-containing diet. Even though supplemental phytase or yeast increased the P retention %, hens fed 0.45%-NPP-diets with or without supplementation had lower P retention % than their counterparts on the 0.25%-NPP-diets.***
5. ***A lower tibia ash % was observed in hens fed on the unsupplemented 0.45%-NPP-diet than those fed the unsupplemented 0.25%-NPP-diet. Supplemental phytase or yeast increased the tibia ash % in hens fed on the 0.45%-NPP-diet.***
6. ***Hens fed on the 0.45%-NPP-diet had higher Ca and lower plasma P concentrations than those fed the the 0.25%-NPP-diet. Dietary supplementation particularly with yeast increased both levels of plasma Ca and P.***

In conclusion, Dandarawi laying hens fed on the 0.25%-NPP-diets, whether supplemented or not with phytase or yeast performed less efficiently for egg production and feed conversion than those fed on the 0.45%-NPP-diets. Additionally, from an economic point of view, it would appear that dietary supplementation of Dandarawi laying hens diet with phytase or yeast; under the conditions of the present study, was an undue extravagance; with the exception of groups of hens fed on the 0.45%-NPP-diet with supplemental phytase which performed for egg production and feed conversion similarly, but economically had an advantage over those of the control on the unsupplemented 0.45%-NPP-diet.

USING BARLEY RADICEL WITH YEAST CULTURES

SUPPLEMENTATION IN BROILER DIETS.

By

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Received: **31/10/2005** Accepted: **28/11/2005**

Abstract*: This study was carried out to evaluate the effect of using broiler diets containing barley radicel (BR) with yeast cultures (YEA SACC 1026) addition on nutrients digestibility coefficients, growth performance, carcass traits, blood constituents and economic efficiency. A total number of 240 unsexed one-day-old Avian 43 broiler chicks were used in the study. They were assigned into eight dietary treatments in three replicates of 10 chicks each. Four dietary levels of barley radicel (0, 8, 16*

and 24%) and two dietary levels of Yea Sacc (0 and 2 g/kg feed) were tested in 4x2 factorial design. The experimental period extended for 7 weeks.

The results obtained were summarized as follows: -

1- Highest apparent digestibility coefficients of OM, CP, EE, CF and NFE were observed with broiler group fed 8% BR level compared with those of the other dietary treatments. Yea Sacc supplementation to broiler diets improved nutrients digestibility coefficients.

2- No significant differences were recorded for final body weight and total weight gain between groups of chicks fed diets supplemented with 8% and 16% barley radicel and those fed control diets at 7 weeks of age.

3- Feed consumption (FC) was decreased with increasing dietary BR levels or Yea Sacc supplementation throughout the experimental period.

4- No significant differences were found among treatments in feed conversion ratio, protein efficiency ratio and efficiency of energy utilization of broiler diets as affected by using barley radicel levels through whole experimental period.

5- Yea Sacc supplementation in broiler diets resulted in significantly decrease final body weight and total weight gain, while feed conversion ratio was improved at 7 weeks of age.

6- There are no significant differences in carcass, giblets and edible parts relative weights by dietary barley radicel and Yea Sacc addition, but relative abdominal fat, gizzard fat and total non-carcass fat were significantly decreased with increasing inclusion level of barley radicel in broiler diets.

7- There are insignificant differences ($p>0.05$) in total plasma protein and liver enzymes activity (GOT and GPT) as using barley radicel level and Yea Sacc addition.

8-Broiler chicks fed on diets containing BR levels had significantly lower values for albumin, A/G ratio, total lipids, cholesterol, urea-N and creatinine of plasma blood, while the plasma globulin was significantly ($p\leq0.01$) increased over that of broiler chicks received control diet. Moreover, Yea Sacc addition in broiler diets significantly decreased total cholesterol and total lipids.

9- Economically, using barley radicel in broiler diet gave the best economic efficiency compared with that of the control diet. Addition of Yea Sacc to the diets containing BR increased economic efficiency at the finisher period as well as the whole experimental period.

In general, these results indicate that using barley radicel and yeast cultures enhances the productive performance and economic efficiency with no adverse effects on blood components of broiler chicks.

OPTIMUM DIETARY PROTEIN AND ENERGY LEVELS FOR NORFA HENS DURING THE LAYING PERIOD

By

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Abstract: *An experiment was conducted to determine the optimum dietary protein and energy levels for Norfa hens during the laying period (22-42 weeks of age). A total of 225 Norfa hens were used. Birds were randomly distributed into 9 comparable groups, 25 hens each. Each group was fed one of the 9 experimental diets during the experimental period. Three levels of crude protein (18, 16 and 14 %), within each level, three levels of dietary energy (2800, 2600 and 2400 Kcal ME /Kg diet) were used.*

Results showed that increasing dietary protein and energy levels significantly ($P<0.05$) improved egg number, egg weight, egg mass and feed conversion (feed intake/egg mass). While, feed intake significantly ($P<0.05$) increased with decreasing dietary protein and energy levels. Increasing dietary protein levels significantly ($P<0.05$) increased shell thickness and albumen percentage. While, yolk percentage decreased with increasing protein level. Dietary energy levels had no effects on external or internal egg quality except Haugh units which were increased with decreasing level of energy. From the nutritional and economical point of view, it could be recommended to feed Norfa

hens on a diet containing 16 % CP and 2800 Kcal ME/Kg diet during the laying period (22-42 weeks of age).

EFFECT OF DIFFERENT LEVELS OF CHOLECALCIFEROL (VITAMIN D_3) ON PERFORMANCE AND SKELETAL BONE FORMATION OF LAYING JAPANESE QUAIL REARED UNDER HOT CLIMATE REGION

By

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Abstract: *This experiment was conducted to determine whether production traits, egg quality (shell quality), bone mineralization and some metabolic functions of calcium and phosphorus could be improved by adding different levels of cholecalciferol (vitamin D_3) 2000, 2500 and 3000 ICU/Kg of diets to laying hen of Japanese quail reared under hot climate region. The experiment lasted 16 weeks during summer season. A total number of 480 laying Japanese quail were used at the start of laying (7^{th} weeks of age) and randomly divided into four experimental groups. Birds were received diets designed to satisfy the recommendation of the NRC (1994). Fertility and hatchability experiment was conducted at the end of experiment (at 23 weeks of age) after the calculation of egg production and feed consumption. Diet and water were provided **ad libitum**. Birds received 16 h of light along the experimental period. Temperature degree (C^o) and relative humidity (%) were recorded daily, since, it was 35C° and 70% as average.*

Results indicated that all production traits and egg quality characteristics improved ($P<0.05$) as the level of cholecalciferol (vitamin D_3) increased in tested diets. Also, the composition, measurements of tibia and plasma parameters increased ($P<0.05$) by the increase level of cholecalciferol in the diets. Results of the studied traits revealed that the best fertility and hatchability percentages for group fed 3000 ICU/Kg of vitamin D_3 as compared with other dietary treatments. Furthermore, dead embryos decreased with the increases of vitamin D_3 in the diet. Shell calcium and phosphorus contents increased ($P<0.05$) as the level of vitamin D_3 increase in the diet. In general conclusion, these results indicated that the addition of vitamin D_3 in diet of laying Japanese quail under hot climate conditions improved bone formation and sh

EFFECTS OF DIFFERENT DIETARY LEVELS OF OKARA MEAL AND MICROBIAL PHYTASE ON BROILER PERFORMANCE

By

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Abstract: *Four hundred and fifty one day old unsexed Arbor Acres broiler chicks were used to study the effect of using different levels of okara meal and microbial phytase on broiler performance, digestion coefficient of nutrients, carcass characteristics and economic efficiency. Three substitution levels of okara meal as well as two level of phytase were used in 3x2 factorial arrangement. Okara meal levels were zero (control), 25% and 50% instead of soybean meal, while the levels of phytase were 0 (control) and 0.05%of diet during the starter (1-3 week of age) and finisher period (4-7 week of age). Broilers were divided into 6 treatments, each containing 75 birds in 3 replicates. The results obtained can be summarized as follow:*

- *Adding microbial phytase to both control diets and okara meal diets (25 and 50% replacement for soybean meal) improved the digestibility coefficient values of dry matter, crude protein, ether extract and nitrogen free extract. While, increasing replacement of okara*

meal from 25 to 50% in broiler diets eithersupplemented or un-supplemented with phytase decreased the digestibility of such nutrients.

- *Replacing okara meal for soybean meal at 25 or 50% in broiler diets supplemented with phytase significantly (P<0.05) improved the nitrogen retained (as % of intake) compared to the control diet (without phytase).*
- *Supplying microbial phytase to broiler diets containing 25% okara meal instead of soybean meal yielded an improvement in performance parameters compared to the other experimental groups during the whole experimental period (1-7 weeks).*
- *Insignificant differences among treatments were observed in carcass yield and chemical composition of broiler meat (moisture, protein and fat).*
- *The best economic efficiency value was achieved when broiler chicks were fed diets containing 25% okara meal replacing soybean meal either with or without phytase supplementation.*

Therefore, it could be recommended to use okara meal up to 25% in replacement of soybean meal in broiler diets supplemented with phytase without adverse effects on growth performance, nutrients digestibility and production costs.

NEUROPATHOLOGIC CHANGES AND BIOCHEMICAL INDICES IN LEAD-EXPOSED QUAIL EMBRYO.

By

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Abstract: ***This study was conducted to determine the influence of lead acetate (Pb) injection into fertile quail eggs on embryonic growth, some hematological and biochemical indices, histopathological changes and hatchability. Seven hundred eggs were injected on the 6th day (d) of incubation with different levels of Pb: 0.01,0.02,0.03 and 0.04 ppm. The results showed that embryo weight and hatchability were decreased, while mortality rate was increased in the treated groups. In most embryos visible signs of Pb injuries were noted. Pb at the level of 0.03 and 0.04 ppm increased (P≤ 0.01) serum glutamate pyruvate transaminase (GPT) in newly hatched chicks compared with the control group .***

Clumps of blood cells and areas of necrosis were observed in the spinal cord and degeneration and necrosis in cerebral hemisphere in embryos injected with Pb as compared to control. It was evident that Japanese quail eggs that were injected with Pb on the 6th day of incubation exhibited marked malformation in the developing embryos associated with low hatchability.

EFFECT OF BLOOD GROUPS ON SOME PHYSIOLOGICAL PARAMETERS OF CHICKENS

By

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Abstract: *Two breeds of chickens, White Leghorn and Fayoumi, segregating for six different B-blood group genotypes (Four B haplotypes $B^{1,}$ B^{2}, B^{13} and B^{19} were identified in White Leghorn breed, while only two B haplotypes B^{y} and B^{z} were identified in Fayoumi breed) were used to study the effect of B-blood group genotypes on some physiological traits in chickens .*

The results revealed that the ejaculate volume, sperm motility and live sperm percentage were insignificantly higher in Fayoumi than White Leghorn cocks. However, the sperm concentration was significantly higher (P≤0.05) in Fayoumi than in White Leghorn cocks. The differences among B-blood group genotypes of White Leghorn breed were highly significant (P≤0.05) for ejaculate volume and semen pH and not significant for sperms motility, abnormality %, live sperms % and concentration of sperms. There were significant differences (P≤0.01) due to B-blood group genotypes effect on only ejaculate volume in Fayoumi breed. Seminal plasma total protein, globulin (G) and calcium (Ca) were significantly higher (P≤0.01) in White Leghorn than Fayoumi cocks. An opposite trend was true for seminal plasma albumin (A) ,A /G ratio, inorganic phosphorus(I P), IP/ Ca ratio and alkaline phosphatase activity. $B^{1}B^{1}$genotype was higher in seminal plasma total protein, globulin, calcium and alkaline phosphatase than other genotypes of White Leghorn, the differences in this respect, were highly significant (P≤0.01). Meanwhile, $B^{y}B^{y}$genotype was higher than $B^{z}B^{z}$genotype of Fayoumi breed for seminal plasma total protein, globulin and alkaline phosphatase activity. An opposite trend wasobserved for seminal plasma calcium, inorganic phosphorus and Ca/IP ratio. Seminal plasma acid phosphatase in both breeds and B-blood group genotypes was quite similar. Body, skin and feather temperature in White Leghorn was higher than in Fayoumi breed. The differences, in this respect, were highly significant (P≤0.01) for skin temperature and not significant for body and feather temperature. The differences among B-blood group genotypes for body, skin and feather temperature were not significant in either White Leghorn or Fayoumi breeds. The respiration rate in Fayoumi was significantly higher (P≤0.01) than in White Leghorn breed. $B^{19}B^{19}$genotype of White Leghorn was significantly (P≤0.05) higher for respiration rate than other genotypes.

EFFECT OF ESSENTIAL PHOSPHOLIPIDS (EPL) INJECTION ON TOTAL LIPIDS AND CHOLESTEROL CONTENTS OF GIMMIZAH LAYING HENS

By

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Abstract: *The main objectives of the present study were to determine the effects of administration of essential phospholipids (EPL) on lipids and cholesterol content of egg-yolk. One hundred and twenty, 36-week-old Gimmizah laying hens were randomly distributed into three equal groups and maintained in individual laying cages, throughout 16 weeks of the experiment. Hens of the 2^{nd} and 3^{rd} group were injected subcutaneous with EPL twice a week at doses of 150 and 300 mg/kg BW, respectively, while the 1^{st} group was injected with ethanol and served as control. Treatments continued for 12 weeks (from 36 to 48 weeks of age). Results showed that*

1. *Injection of 300 mg EPL caused a significant decrease in serum total lipids allover treatment period.*
2. *Injection of EPL significantly decreased serum, cholesterol and triglyceride but significantly increased HDL.*
3. *Injection of 300 mg EPL was significantly decreased, serum calcium at 44 wks of age while GOT was significantly decreased at 44 and 48 wks of age, due to EPL injection.*
4. *High dose of EPL was more pronounced to reduce lipids and cholesterol in both yolk and liver.*
5. *Hatchability and abdominal fat were significantly reduced as affected by EPL injection, while, there was an increase in gall bladder volume.*
6. *Egg weight was significantly increased allover treatment period as a result of injection 300 mg EPL/kg BW, whereas body weight was only increased at 44 and 48 wks of age.*
7. *At 40 wks of age, injection of EPL significantly increased egg number, egg production (%) and albumen weight percentage. This effect was disappeared after this period.*

It was concluded that EPL injection to laying hens reduced total lipids and cholesterol in serum, egg yolk and liver especially high dose of EPL moreover, EPL injection had no adverse effects on layer performance except in hatchability trait.

RELATIONSHIP BETWEEN PARATHYROID, CALCITONIN HORMONES AND PRODUCTIVE, HYSIOLOGICAL AND IMMUNOLOGICAL PERFORMEANCE OF SOME LOCAL STRAINS

By

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Abstract: *One hundred day-old female chicks from each of Silver Montazah, Mandarah and El- Salam strains were used to evaluate both parathyroid and calcitonin hormones. At 2 weeks of age, ten blood samples/each strain were collected to determine both serum parathyroid and calcitonin hormones. Classification appeared high levels of both hormones in Silver Montazah birds, medium in Mandarah and lower in El- salam ones. The heavier body weights and egg weights were correlated with the lower levels of both hormones.*

Silver Montazah birds which are higher in both hormone levels recorded earlier age at sexual maturity, laid more eggs, gained more egg mass, lower shell-less eggs and gave good shell quality.

Mandarah strain showed the highest primary and secondary immuno response against SRBC's followed by Silver Montazah, lowest in El- Salam ones. The same trend was found in weights of bursa, spleen and thymus.

IN VIVO STUDY OF INTESTINAL CALCIUM AND PHOSPHORUS ABSORPTION DURING DIFFERENT STAGES OF EGG FORMATION IN THE REPRODUCTIVE TRACT OF HIGH AND LOW EGG PRODUCTION LAYING HENS

By

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Abstract: *Ninty laying hens of Silver Montazah at 30 weeks of age were used in this study. All birds were individually housed in battery cages, eggs number and weight were recorded daily for three months. Hens were classified into two groups, high (73.27%), and low (32.29%) according to their egg production. At 42 weeks of age, thirty experimented birds for each group were used to estimate the calcium and phosphorus absorption in the small intestine (in vivo). The birds were classified as follows: 20 birds were used at 9 a.m represents the absorption after the egg laying directly; 20 birds were used at 9 p.m. and result from this group represent the absorption during the period of calcification and the last 20 birds were used at 3 p.m, showing the absorption during the soft egg formation. The results of this study indicated that the calcium and phosphorus absorption was significantly ($P \leq 0.01$) higher in the high egg production hens than the low egg production ones. Also the absorption of the calcium and phosphorus at the calcification time was significantly ($P \leq 0.01$) higher than those for the soft egg stage and after laying. Moreover, the higher calcium and phosphorus absorption was obtained in the ileum part while the lower was observed in the duodenum for the high*

and the low egg production groups in Silver Montazah laying hens. The relative tibia weight and the concentration of calcium and inorganic phosphorus either in tibia or serum were significantly (P≤0.01) lower for the high egg production group than the lower ones. While serum alkaline phosphatase was significantly (P≤0.01) high for the high egg production group compared with the low egg production. During the different stages of the egg formation, the phosphorus concentrations in tibia and serum had increased in the calcification time than after egg laying and soft egg stages, while serum alkaline phosphatase concentration was significantly (P≤0.01) decreased in the calcification time than for other stages of the egg formation. Moreover, live body weight was significantly (P≤0.05) lower for the high egg production hens compared with the low egg production ones. However, largest follicle weight and the length of the oviduct parts were significantly (P≤0.01) increased for the high egg production group compared with the low one. No significant differences were observed in the lengths of the oviduct during the different stages of egg formation. Egg weight; shell weight and relative shell weight were significantly (P≤0.01) lower for the high egg production group than the low ones, while no significant differences of shell thickness were observed between both groups of egg production.

EFFECT OF HOUSING LIGHT SOURCE ON HATCHING PERFORMANCE IN JAPANESE QUAIL

By

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Abstract: *The present experiment was conducted on one hundred and eight females and fifty four Japanese quail males at 2 weeks of age for 34 weeks as experimental period. The objectives of this research were to investigate the effect of different light sources such as incandescent (INC) , fluorescent (FL), and natural light (NL) sources on fertility , hatchability , hatching time by hatched chick percentages, sex , hatching time , chick weight at hatch and at pull out , chick weight loss percentage and daily percentage of embryonic mortality during incubation.*

The results revealed that fertility and hatchability percentages had increased significantly (P<0.01) for eggs produced from hens subjected to INC and FL lights compared to those produced from birds subjected to NL light. Also chicks for FL and NL light sources hatched earlier for about four hours than chicks for INC light, while the last hatched chicks for INC light were later by about three hours than those for FL and NL light sources. Regardless of chick sex, time of hatch for chicks from birds subjected to INC light was significantly delayed (406.74 hrs) as compared to time of hatch from birds subjected to FL light (390.3 hrs) and 394.45 hrs for NL light source. Chick body weight at pull out was larger significantly (P<0.01) for both INC and FL sources compared to those from NL light source. Regardless of housing light source, bird's sex had no significant effect on hatch time, chick body weight at hatch and at pull out and chick weight loss percentage. Besides, hatch time for males was numerically earlier for about two hours than for female ones. The main peak of embryonic mortality had been recorded on 3rd, 6th and the last four days of incubation. Whereas, very minute percentage of embryonic mortality was recorded during the mid phase (7-11 days) of incubation among the all experimental light sources.

EFFECTS OF STOCKING DENSITY ON PRODUCTIVE AND PHYSIOLOGICAL PERFORMANCE OF EGYPTIAN LAYING CHICKENS

By

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Abstract: A total of 432 pullets and 44 cocks of Dandarawy and Bandarah strains at sexual maturity (20 wk old) were randomly chosen. Birds in both strains were allocated into three groups and fed the same diets. The 1st (control), 2nd, 3rd groups were placed in 8, 12 and 16 birds / m^2 (floor area unit) to achieve hen densities of 1250, 834, 625 cm^2/birds, respectively. Effects of laying hens stocking density were taken into consideration and assessed.

Results indicated that high stoking densities significantly reduced body weight gain, egg production rate, total egg mass and feed consumption. Additionally, feed conversion was not affected and mortality rate was significantly increased. Plasma total protein as well as albumin and globulin, A/G, GPT, GOT, glucose and T_3 were not affected. However, a significant higher level of corticosterone was detected due to highest stocking densities only. Beside, erythrocytes and leucocytes (Eosinophil, basophil and monocyte and Heterophils) were increased. A significant raise in heterophils cells number, together with a corresponding significant reduction in lymphocyte cells number was observed. Also, Heterophils / Lymphocytes ratio (H/L ratio) was significant increased. The Relative weights of lymphoid organs (thymus and spleen) and physiological organs (thyroid glands and heart) were increased significantly at highest stocking densities. Moreover, Litter pH and litter ammonia increased as stocking density increased. However, egg quality, blood pH, body temperature, respiratory rate, house temperature and house humidity were not significantly affected. Furthermore, fertility, hatchability, hatched chick weight percentages were decreased due to keeping the hens at highest stocking densities. The two chicken strains responded similarly to high stoking densities. The results would suggest that increasing the number of birds to 12 birds/m² increased egg productivity with no physiological or egg quality harmful effects. Besides, The new aspect causes sharp decreases (50%) in the housing, wages, labor and equipment costs per hen subsequently maximizing profits and increasing economic returns.

EFFECT OF AD LIBITUM OR RESTRICTED FEEDING WITH OR WITHOUT SUPPLEMENTAL LYSINE AND METHIONINE ON BROILER CHICKENS PERFORMANCE

By

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Abstract: *One hundred and forty four of one-day Hubbard broiler chicks were used to study the effect of ad libitum or restricted feeding with or without lysine and methionine supplementation on performance, carcass parts and abdominal fat of broiler chickens. All chicks were randomly distributed into 3 groups, (control and 2 groups). Each group included sex replicates of 8 chicks. The three groups were as follows: Birds in group1 (FF) was fed ad libitum from 1 to 42 days of age. Birds in groups 2 and 3 (FR and FRLM) were subjected to a broken feed restriction, whereby the restriction was imposed for 2 days (20% of ad-libitum), then lifted for 2 days at 7 to 42 days of age without or with supplemental lysine (0.2%) and methionine (0.1%), respectively. The obtained results could be summarized as follows: At 6 weeks of age, the boilers of FF group had significantly higher BW (P≤0.05) than those of FR and FRLM groups. No significant differences in the overall mean of body weight gain were detected among all groups. The FR and FRLM groups had better (P≤0.05) cumulative feed conversion (FCR) ratio by about 8.0 and 9.9% than that of FF group respectively, without significant differences between the two groups. No deaths occurred among the different groups at all ages. The FF group had significantly higher (P≤0.05) abdominal fat percentage than that of FRLM and FR groups, while FRLM group had significantly lower (P≤0.05) abdominal fat percentage than that of FR group. The FRLM group had significantly higher (P≤0.05) carcass percentage and lower (P≤0.05) back and wings percentages thane those of FF and FR groups. The groups of FR or FRLM attained higher economical efficiency by 20 %, respectively as compared to FF group.*

It is concluded that, although ad libitum feeding program resulted in higher BW, however it was economically less efficient than that of feed restriction with or without lysine and methionine supplementation. Also, the feed restriction with or without lysine and methionine supplementation had an equal value of economical efficiency, Nevertheless, lysine and methionine supplementation resulted in higher carcass percentage and lower abdominal fat.