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## SUMMARY AND CONCLUSION

The present study was carried out at the Poultry Farm of Sakha, Animal Research Station, Animal production Research Institute, Ministry of Agriculture. The study started in November 1999 and terminated in July 2001.

This experiment was designed to investigate the effects of different light colors (USL, UV, and IR) and heat stress (22 and 32°C) on body weight, feed intake, age at sexual maturity, egg production and egg quality traits of two local improved strains, Gimmizah (G) and Mandarah (M) chickens. During the growing and laying periods

**The results can be summarized as follows :-**

### **1. Growing period:**

#### **1.1 Body weight:**

1.1.1 Chicks exposed to 32°C had body weight significantly lower than 22°C at 4, 8, 12 and 20 wks of age. The differences in this respect, were not significant, but there were significant differences at 16 weeks of age ( $P < 0.05$ ).

1.1.2 Gimmizah (G) strain had body weight significantly higher than Mandarah (M) strain at all ages studied except at 20 wks of age, which was not significant .

1.1.3 Birds exposed to infrared light (IR) colours had the highest body weight at 8, 12 and 16 wks of age, but at 4 and 20 wks of age, the Ultraviolet light (UV) was the highest, the same trend was true for Usual light (USL).

1.1.4 The differences among light colours were not significant at all ages studied except at 16 wks of age, it was significant ( $P < 0.05$ ). The

interaction between heat stress and light colours on body weight was significant ( $P<0.05$ ) at 16 and 20 weeks of age, while the interaction among heat stress, light and strains was not significant at all ages studied.

## **1.2 Growth rate :**

1.2.1 The differences due to heat stress on growth rate during the periods of 4-8, 12-16 and 16-20 wks of age were not significant.

1.2.2 Gimmizah (G) strain had growth rates significantly higher than Mandarah (M) strain at 8-12, 12-16 and 16-20 weeks of age. An opposite trend was true at 4-8 weeks of age .

1.2.3 The interaction between heat stress and light colours was not significant. The same trend was true for the interaction between, heat stress, light and strains.

## **1.3 Feed intake:**

1.3.1 The chicks exposed to 32°C had lower feed intake than that exposed to 22°C. The differences between groups were highly significant ( $P<0.01$ ) at all ages studied except at 16 weeks of age, it was not significant.

1.3.2 The interaction between heat stress and light colours on feed intake was not significant at all periods studied. The same result was found also for interaction among heat stress, lights and strains.

1.3.3 Gimmizah (G) strain had feed intake significantly higher than Mandarah (M) strain at 4,8,12 and 20 weeks of age . An opposite trend was true at 16 weeks of age .

1.3.4 Chicks exposed to the Infrared light (IR) had the large amount of feed intake followed the Usual light (USL) and the Ultraviolet light (UV), respectively. The differences in this respect, were highly significant ( $P<0.01$ ) at all ages studied .

## **2- Laying period :**

### **2.1. Sexual maturity :**

- 2.1.1 The body weight at sexual maturity was higher at 22°C than 32°C. The differences in this respect were not significant .
- 2.1.2 Age at sexual maturity of hens exposed to 22°C was earlier than that exposed to 32°C.
- 2.1.3 Gimmizah (G) strain had body weight at sexual maturity significantly ( $P<0.05$ ) higher than Mandarah (M) strain .
- 2.1.4 There were not significant differences due to light colours effects on age at sexual maturity.

### **2.2. Body weight :**

- 2.2.1 There were significant differences ( $P<0.01$ ) due to temperature (22°C and 32°C) on body weight at 28 and 44 weeks of age. But the differences were not significant at 32, 36 and 40 weeks of age .
- 2.2.2 The differences due to light colours effects on body weight at 28, 32, 36, 40 and 44 wks of age in laying hens were not significant .
- 2.2.3 Mandarah (M) hens had body weight during laying period significantly higher than Gimmizah (G) hens at all ages studied except at 44 weeks of age .

### **2.3 Feed intake :**

- 2.3.1 Hens exposed to 22°C had feed intake higher than that exposed to 32°C at all ages studied. The differences in this respect were not significant .
- 2.3.2 Gimmizah (G) layers were affected by exposure to heat stress for feed intake at different laying periods studied than Mandarah (M) layers .
- 2.3.3 There were highly significant ( $P<0.01$ ) difference of feed intake under the light colours (USL, UV , and IR ) at all ages studied .

## **2.4 Egg production**

- 2.4.1 Layers exposed to 22°C gave egg production (egg number, egg weight and egg mass) significantly higher ( $P < 0.05$ ) than that exposed to 32°C .
- 2.4.2 Layers exposed to UV light colours gave egg number and egg mass higher than other light colors. While hens exposed to IR was superior of egg weight.
- 2.4.3 Gimmizah (G) strain had egg number and egg mass higher than Mandarah (M) strain. The same trend was true for egg weight .
- 2.4.4 There were significant differences among light colours (USL, UV , and IR ) on egg number, egg weight and egg mass .
- 2.4.5 The interaction between heat stress and light colours on egg weight and egg mass was highly significant ( $P < 0.01$ ) . While, the interaction among heat stress, light and strain on egg weight was significant ( $P < 0.05$ ).

## **2.5 Egg quality :**

- 2.5.1 The layers exposed to 32°C had shell thickness lower than that exposed to 22°C. The differences in this respect were significant ( $P < 0.05$ ). While, there were not significant differences for other egg quality studied .
- 2.5.2 There were significant differences ( $P < 0.05$ ) among light colours (USL, UV , and IR) for yolk height and yolk weight .
- 2.5.3 The interaction between heat stress and lights colorus on shape index was significant ( $P < 0.05$ ). While, there interaction among heat stress, lights and strains (HS x LI x ST) on shell thickness was highly significant ( $P < 0.01$ ).