

**THE RESPONSE OF BROILER BREEDER HENS TO DIETARY
LYSINE: HATCHABILITY, EMBRYO GROWTH AND
SUBSEQUENT OFFSPRING PERFORMANCE**

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ABSTRACT

This study was conducted to determine the effects of breeder hen dietary lysine on offspring performance. In trial 1, Cobb 500 broiler breeder hens were fed 1200, 1070, 930 and 800 mg lysine/bird/d from 26 to 60 weeks of age or provided a gradual decrease from 1200 to 800 mg lysine/bird/d or a gradual increase from 800 to 1200 mg lysine/bird/d. Feed allocation was constant for all treatments at 160 g/bird/d. From each of these treatments 84 eggs were collected at 38, 48 and 60 weeks of age and incubated. The different lysine treatments did not have a significant effect on the percentage hatch of the eggs at any of the recorded ages. However, hatchability, unexpectedly, decreased linearly with increasing dietary lysine, although the R^2 for this was low. In trial 2, the effect of the maternal dietary lysine intake on the egg weight, yolk and albumen weights, embryo heat production and embryo growth rates of three genotypes (broiler, broiler x layer, and layer) and growth rates were assessed. The hens were fed either 920 mg lysine/bird/d (medium) or 816 mg lysine/bird/d (low). From each group 60 eggs were collected, weighed and then incubated. During the incubation from d 2 to d 18, 3 eggs were removed from each group every 2 d for eggshell temperature measurement and embryo weight measurement. There was a significant effect of lysine level on the embryo heat production of the broiler genotype with the birds from the high lysine treatment producing more heat and attaining a higher d 18 embryo weight. In trial 3, once the chicks had hatched, chick weight was recorded at 1, 7, 14, 21, 28 and 35 d. The chicks received a commercial starter and grower feed *ab libitum*. The broiler progeny from the birds on the high lysine treatment remained significantly heavier until d 14. The results indicate that an increased maternal lysine level improves the performance of a faster growing genotype up to 14 d of age.

CONTENTS

1. GENERAL INTRODUCTION	1
2. LITERATURE REVIEW	3
2.1 INTRODUCTION.....	3
2.2 DIETARY REQUIREMENTS FOR PROTEIN.....	4
2.2.1 Protein Requirements for Growth	4
2.2.2 Protein Requirements for Growth in Broilers.....	5
2.2.3 Protein Requirements for Growth, Development and the effect of pre-lay protein intake on egg production in Broiler Breeders	6
2.3 PROTEIN REQUIREMENTS FOR EGG FORMATION	9
2.4 NUTRITION OF THE EMBRYO	13
2.4.1. Importance of Protein in Embryo Metabolism	16
2.5 IMPLICATIONS.....	18
3. THE EFFECT OF MATERNAL DIETARY LYSINE INTAKE ON THE HATCHABILITY OF BROILER BREEDER EGGS	20
3.1 INTRODUCTION.....	20
3.2 MATERIALS AND METHODS.....	21
3.3 RESULTS AND DISCUSSION	25
3.3 CONCLUSIONS.....	27
4. THE EFFECT OF MATERNAL DIETARY LYSINE ON EMBRYONIC GROWTH AND EMBRYONIC TEMPERATURE OF THREE CHICKEN GENOTYPES.....	29
4.1 INTRODUCTION.....	29
4.2 MATERIALS AND METHODS.....	30
4.3 RESULTS AND DISCUSSION	34
4.3 CONCLUSIONS.....	44
5. THE EFFECT OF MATERNAL DIETARY LYSINE ON CHICK GROWTH OF THREE CHICKEN GENOTYPES.....	45
5.1 INTRODUCTION.....	45
5.2 MATERIALS AND METHODS.....	46
5.3 RESULTS AND DISCUSSION	48
5.4 CONCLUSIONS.....	52

6. GENERAL CONCLUSIONS	53
LITERATURE CITED	57