# الإحلال الجزئى والكلى لبروتين مسحوق جلوتين الذرة ببروتين الطحالب فى إعداد علائق أسماك البلطى النيلى

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# PARTIAL AND COMPLETE REPLACEMENT OF CORN GLUTEN MEAL PROTEIN BY ALGAE PROTEIN IN DIETS FOR NILE TILAPIA, *Oreochromis niloticus* (L.)

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**ABSTRACT:** *Diets incorporating different levels of corn gluten meal replacement by using biofuel algae or Spirulina protein at 0, 25, 50, 75, and 100% were evaluated for larval/juvenile stage of Nile tilapia (Oreochromis niloticus). Fish averaging 0.02 g were divided into18 groups of 50 fish. There were 3 replicates per every dietary treatment that were fed one of six diets for 11 weeks. Corn gluten protein was replaced with algae on the protein basis. All diets were supplemented with 1.5% lysine and 0.5% methionine. The experimental diets were formulated to contain 34.9 ± 0.1% protein and 12.2 ± 0.1 % lipid in the form of fish oil and soybean lecithin (phospholipids source). The results indicated that algae positively affected feed consumption and fish growth up to the 50% replacement and then performance was depressed. Significant differences in concentration of individual minerals (Al, Fe, Zn, and Cu) in the whole fish body were found. Mineral composition of algae might have affected growth when diets which contained more than 75% of plant protein were replaced with microalgae. These findings suggest that up to 50% of dietary corn gluten meal protein can be replaced with microalgae which significantly enhance fish growth.*

**Key words**: *Corn gluten, Biofuel algae, Spirulina, Nile tilapia, iron, aluminum*

# مقارنة بين الأدلة العامة والأدلة المحددة باستخدام طرق مختلفة لحساب الأهمية الاقتصادية النسبية لبعض صفات إنتاج البيض في دجاج سيناء

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# COMPARISON BETWEEN GENERAL AND COMPLETELY RESTRICTED INDICES BY USING DIFFERENT WAYS OF ESTIMATING RELATIVE ECONOMIC VALUES FOR SOME EGG PRODUCTION TRAITS IN SINAI FOWLS

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**ABSTRACT :** *The present experiment was carried out in the Poultry Farm, Department of Poultry Production, Faculty of Agriculture, Minufiya University at Shibin El-Kom, Egypt. The local strain used was Sinai Bedouin fowl. The experimental records lasted for eight years. The aim of the experiment was to study the response of selection for egg number at 90 day, egg weight, interval clutches and clutch size by using the selection index method of laying Sinai hens and compare different (Five) methods for calculating the economic values in economic matrices for studied traits.*

*The following results were obtained as :*

*1. Different economic values were estimated.*

*2. The equations of the general indices which were constructed for different four economic values:*

*Kolstad* $I_G = 0.2032\ EN90d + 0.1094 EW_M - 0.1473\ I + 0.5719 C.$

*Reg* $I_G = 0.2326\ EN90d + 0.0545\ EW_M - 0.1189\ I + 0.0470\ C.$

*Sharma* $I_G = 0.2553\ EN90d + 0.0860\ EW_M - 0.2501\ I + 0.8726\ C.$

*Lamont* $I_G = 0.0079\ EN90d + 0.3209\ EW_M - 1.103\ I + 3.014\ C.$

*Soltan* $IG = 0.03196\ EN90d - 0.0106\ EW_M - 0.0992\ I + 0.1201\ C.$

*3. The equations of the completely I restricted indices ($I_{R,\ I}$) using different economic values which were supposed to stabilize the performance level of pullets concerning I were:*

*Kolstad* $I_{R,}\ EW_M = 0.1529\ EN_{90d} + 0.1938\ EW_M - 0.5818\ I + 1.3352\ C.$

*Reg* $I_{R,}\ EW_M = 0.1510\ EN_{90d} + 0.1913\ EW_M - 0.5856\ I + 1.2837\ C.$

*Sharma* $I_{R,}\ EW_M = 0.1733\ EN_{90d} + 0.2236\ EW_M - 0.4586\ I + 2.1164\ C.$

*Lamont* $I_{R,}\ EW_M = 0.1129\ EN_{90d} + 0.1450\ EW_M - 0.1965\ I + 1.4252\ C.$

*Soltan* $I_{R,}\ EW_M = 0.0154\ EN_{90d} + 0.0196\ EW_M - 0.0592\ I + 0.1419\ C.$

*4. Generally, the results show that the general index ($I_G$) was most efficient than each of the completely restricted index ($I_{R,EWM}$) for Sinai strain. Moreover, a single restriction ($I_{R,EWM}$) caused less deterioration in the net efficiency of $I_G$.*

*5. There are no discrepancies between the values of expected genetic change per generation for Reg and Lamont methods. The spearman rank correlation coefficient estimated between the fowls under study on the bases of the original index by the both methods was 0.999 at 0.001.*

*6. The breeder can use any of two methods with some restrictions on Sharma method that it may be disturbed by abnormal values which included when calculate standard deviation. Soltan method was more related to regression method this finding may be due to the use of genetic and phenotypic variances in the way of calculations.*

***Key words:*** *Sinai chickens, Selection indices, economic values*