

MORTALITY RATE OF CHICKS AS AFFECTED BY AGE,
BREED AND MONTH OF HATCHING AT THE
LIBERATION PROVINCE, U.A.R.

By

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SUMMARY

Mortality records of nearly 190 thousand chicks bred from Fayoumi, Rhode Island Red, North Holland Blue and their crosses were studied for three hatching seasons at two stations. Differences due to breed, age to twelve weeks of age and date of hatch were investigated. Results are summarized as follows :

(1) Rhode Island Red chicks showed the highest 0-12 week mortality (28.1%) followed in order by Fayoumi (26.2%), North Holland Blue (25.3%) then the crossbreds (21.2%).

(2) In all groups, mortality rate declined with advancing age. The combined data show 12.4, 9.4 and 3.9 percent mortality during the 0-4, 4-8 and 8-12 weeks of age respectively.

(3) Chicks hatched early in the season (Oct. - Dec.) Showed the least mortality. Rhode Island Red chicks were the severest affected by hot weather while the Fayoumi and crossbreds were the least affected.

INTRODUCTION

The Liberation Province Poultry Project is one of the biggest concentration of poultry in U.A.R. Results secured herewith, although not comparable to those on American or European farms, are of significant importance for African and Asian projects working under similar conditions. As mortality rate during the brooding stage represents an important economic element in poultry raising, it was thought of value to investigate the mortality picture in the above project.

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REVIEW OF LITERATURE

Young chicks are very sensitive to chilling as shown by Seeger and Tomhave (1944), Mihalescu and Paduraru (1955) and Moustafa (1963). This is related to the lack of heat producing and conserving mechanism, (Randall (1942) and Morengand Shaffner (1951). Breed differences in resistance to special diseases (Greenwood and Blyth (1948) and Taubitz (1950) and resistance to unfavourable conditions Hutt (1938) and Fox (1951), have been demonstrated.

Crossbreeding has generally decreased mortality rate "Dickerson et al. (1950), Ragab et al. (1955), Kawahara (1959) and Nordskog and Phillips (1960)". Early winter hatches survived better than summer or hot weather hatches. "Upp (1936) and Moustafa (1963)".

MATERIALS AND METHODS.

Records kept on mortality for three hatching seasons (1958/1959 through 1960/1961) were available for this study. Those included 188, 657 chicks belonging to Rhode Island Red (R. I. R.), North Holland Blue (N. H. B.), Fayoumi (F.) and crosses of foreign cockerels and Fayoumi females (C.) (Table 1). Chicks were hatched weekly at two stations and reared on floor in compartmental brooder houses, with about 500 chicks per compartment. Electric heaters were used and adequate rations were fed, (Table 2). When six weeks of age, the chicks were transferred to new quarters with only night heating as necessary.

TABLE 1.—Total number of hatching chicks having complete mortality records from 0-12 weeks of age according to breeds and farms.

Breed	R. I. R.	N. H. B.	F.	C.	Total
Farm					
Omm Saber . .	12691	10535	24225	3962	51413
Omar Makram .	22879	30709	62610	21046	137244
Total	33570	41244	86835	25008	188657

TABLE 2.—The composition of chick and laying ration fed usually during the three seasons studied.

Rations Ingredients	Layers %	Chicks	
		0-8% wks.	8-12% wks.
Ground corn	25	20	20
Ground wheat	15	20	15
Barley	10	10	20
Rice bran	10	10	10
Wheat bran	15	10	10
Bean	5	10	5
Decorated cotton seed meal . .	10	5	10
Linseed and sesame cake . . .	5	10	5
Fish meal	2	2	2
Meat scraps	3	3	3
Bone powder	2	1	1
Lime stone	½	½	½
Salt	½	½	½
Cod liver oil	½	1	1
Taramycin	—	0.1	0.1
		(3+3)	(10)

Barseem (*Trifolium Alexandrinum*) was offered at mid meals.

RESULTS AND DISCUSSIONS.

A.—Age and Breeds :

As shown in Table (3) the highest mortality rate for all breeds occurred within the first four weeks of life. Death rate tended to decrease considerably thereafter. This confirms previous reports and earlier explanation of this observation. It also means that special care should be taken when managing young chicks to avoid such high losses. Feeding and heating elements need to be carefully checked for this purpose, with adequate hygienic measures.

The R.I.R. chicks showed the poorest vitality. This was mainly due to the extension of the high rate of mortality after the first four weeks of life. The crossbreeds showed the lowest mortality in this period, while the N.H.B. and F. chicks were intermediate. It is worth noting that the early mortality in Fayoumi and its crossbreeds was higher than that in the pure foreign breeds. This may be due to chance or to some other factors worthy of investigation. The high mortality of the R.I.R. chicks during hot weather ought to be considered. It is our opinion that breed's responses to climatic as well as other environmental conditions in Egypt need further experimentation.

Early findings of Ragab et al. (1957), Amer et al. (1957) and Rizk and El-Ibiary (1960) favoured crossbreeding but found no one breed consistently superior under the local experimental conditions.

TABLE 3.—Number of hatching chicks in the different breeds and crosses and their mortality percentage from 0-4, 4-8, 8-12 and 0-12 weeks of age.

Breeds	Chicks No.	Ages (weeks)			Total 0-12
		0-4	4-8	8-12	
R.I.R.	35570	11.6	11.4	5.1	28.1
N.H.B.	42144	10.5	9.6	5.2	25.3
F.	86885	13.7	9.2	3.3	26.2
C.	25008	12.2	6.9	2.1	21.2
Total average .	188657	12.4	9.4	3.9	25.7

B.—*Month of hatching :*

Table 4 and Figure 1 show the mortality rate for the different monthly hatches at 4-week intervals. It is generally observed that chicks hatched during the first three months of the season i.e. October, November and December have lower mortality than those hatched later. The only feasible explanation for this may be linked with better housing and infection control during cooler weather plus succulent green feed (*Trifolium Alexandrinum*). The cold nights of January and February are also responsible for the high losses experienced within the winter period especially as the Liberation project, lies close to the western desert.

It can be observed from the above illustration that after four weeks of age, the Fayoumi and its crosses withstand hot weather far better than either Rhode Island Red or North Holland Blues. This may be due to some adaptive traits of the Fayoumi to hot weather, although more extensive work is needed to draw substantial conclusions in this respect.

TABLE 4.—Monthly and total number of hatching chicks from all sources and their mortality percentage from 0-4, 4-8, 8-12 and 0-12 weeks of age.

Months	Chicks No.	Ages (weeks)			Total 0-12
		0-12	4-8	8-12	
October	3440	4.8	3.5	1.7	10.0
November	35735	5.5	7.0	2.3	12.8
December	36371	8.7	5.6	2.3	16.6
January	30437	13.7	10.6	6.8	31.1
February	37146	14.6	16.6	5.5	36.7
March	21391	18.7	9.2	4.3	32.2
April	19085	18.6	6.0	2.6	27.2
May	5073	17.9	10.7	1.9	30.5
Total average	188657	12.4	9.4	3.9	25.7

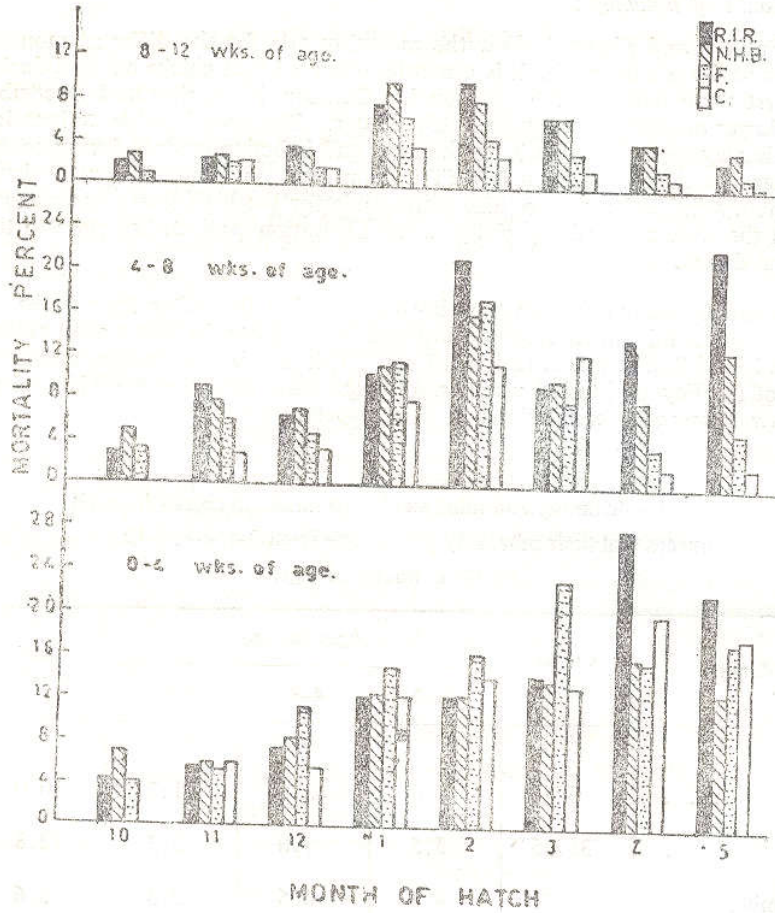


DIAGRAM 1.—Mortality percentages from 0-4, 4-8 and 8-12 weeks of age for pure and crossbred chicks within the different months of hatching.

It is evident from the preceding results that the 25.7% chick mortality from 0-12 weeks of age is much too high. With the future expansion of broiler industry and intensive poultry farming on the national level, reducing such a huge percent should be given the greatest concern. Many managerial aspects including housing, feeding and competing diseases and parasites must be considered. If proper environmental facilities cannot be maintained, it is recommended that the projects be confined to the available suitable facilities. It is also felt that more work is needed for developing more suitable chicks under our climatic conditions. The hot weather of summer creates many problems to be solved. Unless we do our best to find proper solutions for the above problems, poultry production will always be limited.

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تأثير العمر والنوع وشهر الفقس على معدل النفوق في مجموعة من الكتاكيت بمديرية التحرير

الملخص

شملت الدراسة زهاء ١٩٠ ألف كتكوت من أنواع الفيومي والروود أيلاند والهولندي الأزرق وكذلك مجموعات من الأفراد الخليطة بين هذه الأنواع في خلال ثلاثة مواسم تفريخ وفي محطتين من محطات تربية الدجاج - وقد تبين من نتائج هذا البحث أن كتاكيت الروود أيلاند الأحمر كانت أكثر المجموعات نفوقا في العمر بين الفقس إلى ١٢ أسبوعا إذ كان متوسط نسبة النفوق ٢٨٩٪ يليها الفيومي بنسبة ٢٦٢٪ ثم الهولندي الأزرق بنسبة ٢٥٣٪ ثم المجموعات الخليطة بنسبة ٢١٢٪ .

وقد تبين أيضا أن نسبة النفوق تبدأ كبيرة عند الفقس وتقل كلما تقدم العمر في كل مجموعات الكتاكيت وقد كانت هذه النسبة ١٢٤٪ ، ٩٤٪ ، ٣٩٪ في الدة بين الفقس وأربعة أسابيع ثم ٤ - ٨ أسابيع ثم ٨ - ١٢ أسبوعا نفس الترتيب .

وقد ظهر أيضا أن الكتاكيت المبكرة في الموسم أي في المدة من أكتوبر إلى ديسمبر كانت أقل المجموعات نسبة في النفوق . كما تبين أيضا أن نوع الروود أيلاند الأحمر كان أكثر الأنواع تأثرا بحرارة الجو بينما كان الفيومي والمجموعات الخليطة أقلها تأثرا بهذا العامل .