

ROLE OF SEAWEED IN POULTRY FEED. Part -I

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Brown seaweed *Cystoseira barbata*, was processed and used in poultry feed. An increase in body weight, number of eggs and shell thickness was observed.

Key words: Poultry feed, Brown seaweed, Karachi coast.

Introduction

Poultry farming had been a small cottage industry of Pakistan that supported 30 million birds [1]. Recently it has expanded tremendously and a population of 95, 10.90 and 1.86 million broilers, layers and breeding stock respectively has to be fed, a total amount of 1.018 million tonnes of feed [2]. For an under developing country like Pakistan, feed availability for these birds is a problem. An attempt has been made to utilize Beckmann's experiments [3,4] who demonstrated that animals can eat seaweed for many months as an additional food. It has been reported earlier that during the World War I scarcity of grain in Europe lead to use seaweed meal for cattles, sheep and poultry [5-7].

Nishida [8] has also pointed out the use of seaweed in food. Nakajima, Takashi *et al.* [9,10] have also studied the effect of seaweeds on layers and reported positive results.

In view of the above experiments this is the first attempt in Pakistan that seaweed *Cystoseira barbata*, easily available, has been satisfactorily used in poultry feed.

Material and Method

A total number of 24 birds of 26 weeks old were divided into 3 groups, I, II and III. Each experimental group of 8 birds was comprised of 2 males and 6 females.

For selection of a healthy bird the following three physical characters were examined; (i) smooth glossy comb, (ii) bright red face and (iii) alert prominent eyes and pale or white beak.

Three kinds of feeds i.e. standard feed, combined feed, and seaweed feed were used. The standard feed was purchased from the market. The details of combined feed is given in Table 1. The seaweed feed was prepared by using sun dried powdered "*Cystoseira barbata*", as given in Table 2.

Cystoseira barbata was chosen, since it contains an appreciable amount (9-10%) of protein [11].

Birds of 3 groups were fed with standard feed, combined feed and seaweed feed respectively.

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During the experimental work special attention was focussed on body weight, egg production, number of eggs produced per hen, egg weight, specific gravity of egg, egg shell thickness, mortality etc.

Body weight of 3 groups was noted thrice, at the age of 28, 52 and 64 weeks. The average weight of males were 130, 136, 135 ounces while that of females were 135, 130, 134 ounces, respectively. The average of eggs produced per hen throughout the laying period was 108, 102, 106 respectively.

54 Eggs from all groups were studied at three different stages. Sets of 6 eggs from each group were weighed.

Specific gravity of eggs was calculated by comparing the weight of egg in air with the weight of egg in water. These eggs were examined for their shell thickness at two points on the waist of egg. The instrument used was Digital Vernier Caliper "Mitutoyo" of Japan (Table 3).

TABLE 1. COMBINED FEED COMPRISING MAIZE, MEAT AND LUCERENE.

Maize grit	Meat offal	Green lucerene
4.0 Ounce per bird per day	1.0 Ounce per bird per day	1.0 Ounce per bird per day
66.6% of total ration per bird per day	16.6% of total ration per bird per day	16.6% of total ration per bird per day

TABLE 2. SEAWEED FEED COMPRISING WHEAT, MEAT AND SEAWEED.

Wheat whole and paddy whole	Meat offal	Seaweed
3.0 Ounce per bird per day	2.0 Ounce per bird per day	1.0 Ounce per bird per day
50% of total ration per bird per day	33.3% of total ration per bird per day	16.6% of total ration per bird per day

TABLE 3. EGG QUALITIES INCLUDING, WEIGHT, SPECIFIC GRAVITY AND SHELL THICKNESS.

S. No.	Age of birds (weeks)	Group No. of birds	Egg weight (ounce)	Specific gravity of egg	Egg shell thickness (m.m.)
1.	28	I	4.00	1.081	0.362
		II	3.85	1.079	0.360
		III	3.96	1.080	0.361
2.	52	I	3.98	1.080	0.361
		II	3.91	1.078	0.360
		III	3.96	1.080	0.362
3.	64	I	3.98	1.080	0.362
		II	3.90	1.079	0.360
		III	3.94	1.079	0.362

Results and Discussion

Rhode Island Reds are the indigenous birds of Pakistan. The climatic conditions of Karachi is suitable for these dark redish brown hens, we have also selected these for our experimental work. The practice of using seaweed in ration is not new. In Cuba, case experiments have been carried out with seaweed as additive to poultry meal and optimal results were obtained [12]. We have also obtained appreciable results, as an increase in body weight when hens of group III were fed with seaweed additive ration. A comparative study of body weights make it clear that the coefficient of variation of body weight in group I and III was not quite prominent and the difference between group II and III was quite significant.

A maximum egg production of almost 75% in groups I, III and 60% in group II was noted at the age of 31- 33 weeks. Afterwards there was a gradual decline to about 50%.

The specific gravity was almost 1.0 for all eggs, (Table 3). In USA, 6000 hens were fed 1.25% meal in their normal ration and this reduced the proportion of thin shelled eggs from 3-1.9 %. When after three months, the seaweed addition was stopped, the proportion of thin shelled eggs increased again to 3% [13].

The mortality due to diseases and accidents was noticed 1.0%, while the causes of accidental deaths were not revealed.

Conclusion

The study suggests that *Cystoseira barbata* could be safely used as source of protein and other necessary ingredients required in the poultry feed alongwith other basic ration.

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Seaweed	Meal of fish	Whole whole
1.0 Ounce	3.0 Ounce	3.0 Ounce
per bird	per bird	per bird
per day	per day	per day
10% of	33.3% of	30% of
total ration	total ration	total ration
per bird	per bird	per bird
per day	per day	per day