

## Structural Profile and Emerging Constraints of Traditional Poultry Production in the Aures Region (Algeria)

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### Abstract

The objective of this study was to evaluate the production of traditional poultry farms and to identify constraints to its development. The study was carried out during 2013 in Batna province (Aures, Algeria). Data was collected through structured questionnaires and oral interviews. Socioeconomic characteristics of farmers showed that majority of them are males aged of 25 to 50 years; married and either had primary education or no formal education at all. Main production characteristics included small-sized flocks (10-30 birds), poor feeding schedule, selection of eggs for hatching from existing flocks resulting in in-breeding and lack of proper vaccination against diseases. The production system was also constrained by low chick survival rate (less than 50%), high disease prevalence (particularly Newcastle disease), lack of veterinary assistance and marketing problems such as inadequate on-farm patronage. In spite of these constraints, most of farmers expressed satisfaction with their production incomes. This showed that traditional poultry flock production plays a significant role in the livelihood of the smallholder farmers in the studied area. Therefore, there is no doubt that improvement of chicken breeding, health and management practices will lead to enhanced efficiency of the farm as well as the income of the peasant.

**Keywords:** Traditional poultry; Management practices; Constraints; Health; Algeria

### Introduction

Keeping and producing indigenous poultry genotypes is a traditional practice in rural areas of Aures (Algeria). Flocks generally include, chickens, roosters, ducks, geese and turkeys. However, the local broiler chicken (*Gallus gallus domesticus*) is the most common type of poultry raised in these rural areas, since this specie is best affordable for poor rural households. Poultry traditional breeding continues to be an integral part of production systems and household economies in the mountains and highlands. This type of farming contributes significantly to the availability of proteins of animal origin for rural communities in the form of meat and eggs [1,2]. Chicken meat and eggs are a readily available source of high quality proteins and therefore contribute to a balanced and nutritious diet, which is especially important for children and elderly people. Commonly, rural production is oriented towards domestic consumption and sometimes for the acquisition of small savings to cover petty expenses. Although in rural areas, poultry products are generally obtained with minimal inputs, production performance such as body weight, weight gain, and the egg-hen-year ratio is also generally low [3,4]. These results placed the traditional poultry production system at a disadvantage compared to the semi-industrial livestock system. In Algeria and during recent years an improvement program of poultry production was directed towards the introduction of selected breeds and the modernization of farm buildings, with the help of multinational and private investments [5]. However, simple management changes in rural areas can significantly improve poultry production and increase the income of rural families. This is demonstrated by the impact of development project of traditional poultry farming initiated by FAO for developing countries [6]. The present study aims to assess the traditional poultry production system in rural areas of Aures (province of Batna) and identify its structural profile, management constraints and the different health problems recorded during rearing.

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## Materials and Methods

This study was conducted in the area of El Madher and Fesdis in the province of Batna, Aures region, Algeria. This area is characterized by two distinct seasons, cold and damp during the winter and hot and dry in the summer. The vegetation of this region is mainly represented by oak forests and cedar. The average annual temperature varies between 7 and 40°C, while rainfall between 40 and 120 ml per year. The majority of locals are farmers with main activity of grain farming practice and arboriculture. Most households, in addition to poultry, keep livestock such as sheep, cows, and goats grazing on pasture or rough wasteland.

Data collection was conducted through structured questionnaires that were distributed to farmers, in addition to an oral interview according to the method of Adedeji, *et al.* [7]. A total of sixty-one questionnaires were distributed randomly to local farmers in the study area, practicing traditional poultry farming. Questionnaires approached socio-economic status, livestock management, and preventive measures against avian diseases, as well as age, marital status, education level, and occupation of farmers. Management practices in poultry farms, flocks composition (animal species), size (animal number) and feeds composition were also noted. The data on the animal's health status and the marketing of the product were identified through the oral interview. Data analysis was performed with the use of percentages tables

## Results and Discussion

Socio-economic characteristics of local poultry farmers in the studied area are presented on Table 1. The age distribution shows that farmers in the group of 41-45 years are predominant (31.14%) compared to other age groups. The majority of farmers are men (57.37%) and most of them (60.65%) are married. In addition, farmers whose are essentially full-time farmers represent 62.29% and they were mostly at the level of primary education (32.78%) or without any formal education (37.70%). In terms of livestock management practices (Table 2), approximately 80.32% of farmers indicated absence of constraints in obtaining poultry feed, since their flock sizes are generally small (10-30 birds). The majority of farmers (63.93%) feed their flocks freely by hand and prefer mainly barley (62.29%) compared to other cereals. Feed is distributed once a day (75.40%) and none of the farmers use commercial poultry feeds because of its' high cost. They prefer to rely on household scraps and barley readily available and cheaper. This is not the case in other countries in which farming practices are different than this study [7,8].

Characteristics	Frequency	Percentages (%)
Age range (year)		
25 - 30	5	8.19
31 - 35	11	18.03
36 - 40	16	26.22
41 - 45	19	31.14
over 46	10	16.39
Marital status		
Married	37	60.65
Single	15	24.59
Widowed	8	13.11
Divorced	1	1.63
Sex		
Male	35	57.37
Female	26	42.62
Level of education		
No formal education	23	37.70
Primary education	20	32.78

Secondary education	14	22.95
Post secondary education	4	6.66
Occupation		
Civil servant	14	22.95
Full time farmer	38	62.29
Other occupations	9	14.75

**Table 1:** Characteristics of traditional poultry farmers in the Aures region (n = 61).

Parameters	Frequency	Percentages (%)
Constraints in getting feed		
Yes	12	19.67
No	49	80.32
Number of eggs/clutch		
1 - 5	8	13.11
6 - 10	29	47.54
11 - 15	19	31.14
16 - 20	5	8.19
Method of Incubation		
Natural incubation	57	93.44
Artificial incubation	4	6.66
Hatching and chicken survival (%)		
0 - 50	41	67.21
50 and above	20	32.78
Feeding system used		
By hand	39	63.93
Bird feeder	15	24.59
Others	8	13.11
Feeding/day		
Once	46	75.40
Twice	13	21.31
Three times	2	3.27
Type of feed		
Wheat	20	32.78
Barley	38	62.29
Corn	3	4.91
Commercial feed	0	0

**Table 2:** Management practices in traditional poultry production in the Aures region (n = 61).

During production, the number of eggs laid per clutch ranged from 6-10 eggs (47.54%), although some farmers have reported up clutches of 16-20 eggs (8.19%). In addition, farmers in the study area selected hatching eggs of their flocks at random, 93.44% of them use the natural incubation method and 67.21% of them recorded a hatchability rate less than 50%. Live chicks are lost just after hatching, either because of the weather conditions or diseases. These observations are similar to those reported by Abdelkader, *et al.* [9] and Nurudeen., *et al.* [10].

The analysis of prophylaxis practices (Table 3) shows that 86.88% of farmers do not apply any prevention program against infectious diseases (especially Newcastle disease, infectious bursal disease and coccidiosis) while only 8.19% of them vaccinate their birds and other farmers (3.90%) use only herbs. This method was also observed by, Adedeji., *et al.* [7]. Even among the five farmers who vaccinate their flocks, frequency of vaccination is either once (6.65%) or twice (1.60%) along the production period. Farmers usually report a high incidence of diseases (65.57%) during fall and spring seasons, especially Newcastle disease (63.93%) compared to the other seasons (9.83% for summer and 24.59% for winter). This is compounded by the lack of veterinary assistance (80.80%). During these times of epidemics, most farmers (75.40%) incinerate carcasses of dead birds, 19.67% prefers illegal slaughtering. Only 4.91% of farmers practice self-medication. Prophylaxis practices and constraints such as vaccination frequency and disease prevalence noted in this study are consistent with previous research [3,11]. Concerning the marketing of poultry products (Table 4), 90.16% of farmers prefer to sell their products on the village market place, instead on the farm (9.83%). Despite all the challenges of production and marketing, most farmers (65.57%) expressed satisfaction with the income derived from the local poultry production. For example, in Bangladesh, poultry farmers generated approximately 53% of total family income which is used to buy food, to pay school fees and in house maintenance [12].

Parameters	Frequency	Percentages (%)
Disease prophylaxis by:		
Cleaning and disinfection	53	86.88
Vaccination	5	8.19
Herbs	2	3.90
Frequency of vaccination		
Once	4	6.65
Twice	1	1.60
Period of disease prevalence		
Summer	6	9.83
Winter	14	24.59
Others seasons	41	65.57
Common disease		
Newcastle disease	39	63.93
Gumboro disease	15	24.59
Other	7	11.47
Fight against diseases		
By incineration	46	75.40
By illegal slaughtering	12	19.67
Self-medication	3	4.91
Veterinary assistance		
Yes	12	19.67
No	49	80.80

**Table 3:** Health management in traditional poultry production in the Aures region (n = 61).

Parameters	Frequency	Percentage (%)
Sales area of the product		
Market place	55	90.16
Farm	6	9.83
Income satisfaction		
Yes	40	65.57
No	21	34.42

**Table 4:** Marketing in traditional poultry production in the Aures region (n = 61).

## Conclusion

Based on the obtained results, traditional poultry production plays an important role in the livelihood of small farmers in the study area. This can serve as a tool for rural development. It is therefore recommended that rural development programs designed by the government or other organizations take into account the different existing constraints on the farm. Improvements in the various fields (education of farmers, chicken breeds, bio-security program, livestock management, bank loan) will allow the enhancement of production and increasing the farmer's income.

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