

THE STATUS OF INDIGENOUS POULTRY OF SOUTHERN IRAN

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SUMMARY

A survey was conducted to study the status of local poultry populations of the Fars province in southern Iran. The survey showed that exotic breeds were widely distributed in the vicinity of all the cities of the province. Populations of pure native poultry were almost exclusively found in remote areas which had very limited communication and transportation access to the metropolitan centers. Unless some measures of protection are introduced it is highly probable that the remaining native poultry become extinct in the near future. No pure native poultry population was found in three of 14 municipalities in the province. Chicken mortality was found to be the main problem in villages, resulting in a very low poultry density. It seems that a well designed animal health program would be the most effective way of increasing the number of native poultry and saving them from extinction. Eggs were collected from 130 villages in 16 localities of the province, and were incubated (N=11917). Means of reproductive capacity (% chicks out of eggs incubated), fertility and hatchability were 44.5, 66.9 and 66.5% respectively. The results show that increasing the number of local poultry by purchasing and incubating eggs from the vilages and distributing the chicks among villagers, is inefficient and very costly.

INTRODUCTION

Poultry production in Iran, like many other countries in the region, has been primarily supported by the traditional extensive village system until the early 1950's (Maljaei, 1984). Typically, each family kept a few native hens which foraged around the households, at virtually no expense. Human population growth, and higher per capita income due to increased oil revenues, have resulted in a sharp increase in demand and price of food during the past three decades. To meet the increasing demand, both the government and private sector concentrated their efforts on the expansion of large commercial broiler and egg production units, using improved exotic breeds (Zohari, 1970a; Maljaei, 1984). Rapid turnover of the invested capital, availability of highly efficient strains of poultry in the world market, and difficulties involved in making improvement in other sectors of livestock production were among the factors which promoted investment in this field. In addition, government assistance, mainly in the form of low interest loans, was particularly conducive to rapid expansion of modern poultry industry in Iran.

Although the improved exotic strains of poultry have played an important role in providing much needed animal protein in Iran (Zohari, 1970a), transformation of the poultry production system from traditional to a modern and heavily capitalized industry have not been without problems, primarily because it was not a carefully planned program. The first problem which arose from the change in the poultry production system was its great impact on the traditional poultry husbandry in villages, which was a primary source of animal protein for more than 50% of the population of the country. The villagers supplied the city dwellers with eggs and poultry for centuries, but this direction was reversed within a period of less than three decades. As a result of the uncontrolled expansion of exotic breeds, the native poultry populations declined in number, and have

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almost become extinct in many areas. Because of the availability of exotic breeds in most parts of the country at a relatively low cost (compared to the other types of livestock), along with the short generation interval, complete extinction of native poultry in the near future may result, and conservation of native poultry populations deserves urgent and serious attention. The second problem associated with uncontrolled expansion of poultry industry was the spread of contagious and parasitic diseases (Zohari and Ziaei, 1983) which was the result of noticeable concentration of poultry farms around the metropolitan centers. Finally, a considerable portion of the necessary resources for modern poultry production, such as day-old chicks (or parental stocks), feedstuff, machinery, pharmaceutical products, and some technical personnel are imported (Zohari and Ziaei, 1983; Maljaei, 1984), as in the case of most developing countries (Krostitz, 1984).

The main objective of the Animal Husbandry Division of the Ministry of Agriculture with regards to poultry production in rural areas has been "the distribution of improved exotic breeds among the villagers" (Bureau of Animal Husbandry, 1965, 1966). The start of the program in 1954 was termed "the turning point of the poultry industry of Iran" (Bureau of Animal Husbandry, 1966). This program however was terminated after an outbreak of various diseases which resulted in heavy losses among the local and exotic breeds in many areas. The reasons for termination of the program were never reported, nor were any new plans for supporting the local poultry proposed.

Evaluation and improvement of native breeds is lengthy, expensive, and requires expertise and knowledge, while importing improved breeds would be easy, resulting in a rapid increase in production and efficiency. However, without a conservation plan, the latter approach will certainly result in the extinction of the indigenous poultry breeds. Furthermore, there has always been a body of opinion assuming that expenditure of time and capital on improvement of indigenous poultry would be hopeless. Based on this assumption, distribution of exotic breeds once again started after the revolution in 1980, indicating that not much experience had been gained from previous attempts by the same organizations. There is no indication that the outcome of the previous programs was ever analyzed to determine the pitfalls and reasons for the failure. Distribution of improved laying hens together with battery-cage system and complete poultry ration (mainly imported) among the people in both villages and cities of the Fars province is an example of the present policy (Division of Agricultural Reconstruction, 1980). Increasing the number of local poultry in villages seems to be difficult, since the efficiency of natural reproduction using broody hens can not compensate for losses due to high mortality rate and human consumption. One possible way to increase the number of local poultry in the villages is by collecting and incubating eggs from areas with pure indigenous poultry, and distributing the vaccinated chicks among the farmers. No information is available about the outcome of such project, and problems, limitations and probability of success of such program in Iran are not clear.

The objectives of this study were to study the state of poultry production in villages of the Fars province, and to evaluate efficiency of a program for increasing the number of poultry in rural areas based on regular collection and incubation of local poultry eggs from villages.

MATERIALS AND METHODS

To identify localities suitable for egg sampling, it was essential to investigate different areas of the Fars province. A "locality" was defined as a cluster of nearby villages without any significant natural barrier (wide river, high mountains, desert) which would have limited communications among them. Large distances between the villages, particularly if separated by natural barriers, could have resulted in genetically distinct populations. Therefore, the term "locality" was defined to imply "genetically different" groups of poultry with large numbers of individuals so that they could be considered a

population. A "suitable locality" was defined as a locality for which no evidence could be found that exotic breeds had ever been introduced or mixed with the local poultry population. A preliminary survey was started in March 1981 to determine locations of poultry farms raising exotic breeds, and to identify and reject the areas in which exotic breeds had already been distributed. Information was gathered from various sources, such as the Agricultural Branch of Jihad-Sazandegi (Organization for Rural Development), the Bureau of Animal Husbandry, the District Veterinary Offices, and the Statistical Center of Iran (Fars branch). Three questionnaires were then designed for gathering more information about areas within each municipality, believed to be free of exotic breeds. Based on the information collected, sixteen suitable localities covering 130 villages were identified. Such localities were mainly located in remote parts of the province and access to some of the villages was possible only by mules because of the absence of roads and presence of natural barriers.

Egg collection started in April 1981. Despite considerable facilities and man power devoted to this project, long distances between localities and the absence of main roads in many areas, made it impossible to collect eggs from all the localities at the same time, as was originally planned. Furthermore, egg supply was lower than expected in many areas because most of the native hens were either broody or were raising chicks when the program started. Therefore, sampling was delayed in some localities, and all the eggs supplied by the villagers, regardless of their size and shape, were purchased. The collected eggs could, therefore, be considered as a representative sample of eggs produced in each locality. The eggs were identified, cleaned, weighed and incubated. On day twenty-second of incubation, the number of live and dead chicks and the number of eggs failed to hatch were recorded. All unhatched eggs were examined by breaking them open and the number of infertile eggs were identified macroscopically. Eggs which were classified as infertile included fertile eggs in which embryos have died during the very early stages of development.

RESULTS AND DISCUSSION

Fars province in southern Iran is located between 27°, 3' and 31°, 42' N latitude and 50°, 37' and 55°, 38' E longitude, with an area of 133,300 km². The province is divided into 14 municipalities, 32 counties and 112 townships, with a total of 4956 villages (Statistical Center of Iran, 1976a). Climatic conditions vary in different parts of the province. It is hot and dry in the south and southeastern parts, while high elevations of Zagros mountains provide a relatively moderate to cold climate in the north and northwest. Sheep and goats are the most popular types of livestock in the province, and a considerable portion of approximately 5 million sheep and goats of the province (Ayattollahi, 1978; Jihad-Sazandegi, 1981) are managed under migratory system by the nomads who, because of the very nature of their life style, are not very involved in poultry production.

The situation of local poultry in Fars province: The information gathered from the questionnaires and other sources indicated that commercial poultry production units raising improved exotic breeds were established in the vicinity of all the urban centers in the province. These units were mostly selling live chickens, and had been a major factor in the vast spread of exotic poultry within the surrounding villages. There were 760 large commercial broiler production units (with a capacity of more than 5000 chickens each) in the province, with a total capacity of approximately ten million chickens. There were also 40 commercial laying houses with a total capacity of approximately 880,000 layers. The poultry populations in many of the villages near the cities predominantly consisted of exotic breeds or their crosses with native poultry. There was no locality with a large number of pure native poultry in three of 14 municipalities (Abadeh, Lar and Fasa), due to the vast spread of exotic breeds. Lari, one of the well known local poultry breeds of Iran, which

is similar to Cornish and Malay breeds, has been maintained in the Lar municipality (Zohari, 1970b). It was not possible, however, to find a pure Lari breed in the Lar municipality, nor in its adjacent area of southern Mammasani, indicating that populations of the pure Lari breed no longer exist in this province.

Problems of poultry production in villages: Although the questionnaires were designed to find localities appropriate for egg sampling, they also provided some information about poultry production in the villages. It should be noted that detailed information was collected from those areas in which the preliminary survey indicated that exotic breeds had not been widely distributed. Information about other areas came mainly from such sources as the Agricultural Branch of Jahad-Sazandegi, the Bureau of Animal Husbandry, the District Veterinary Offices and the Statistical Center of Iran. The most frequent request of the villagers was for veterinary services. Almost all the villagers, who were questioned, complained about high mortality rates among their poultry, especially among young chicks. They believed that mortality was the major factor in reducing the number of local poultry, with a subsequent increase in the price of poultry products. It was not possible to obtain an accurate estimate of chicken mortality, however, evidence suggested that it could be as high as 50% in some areas. Due to the lack of regular vaccination and disease control programs, many of the villages near the metropolitan centers also suffered from regular waves of contagious disease outbreaks resulting in great losses of poultry.

The response to the question regarding the villagers desire to keep more chickens was always positive, yet many of the villagers hesitated to spend money to buy chickens. Low income, the high price of the native chicken and the fear of a high chicken mortality rate were found to be the main reasons. More than 50% of the villagers who were questioned preferred native chickens to exotic breeds, without being able to give any reasons. Most of the villagers believed that the best way to increase the number of poultry was to prevent chicken mortality. This response deserves special attention as it shows a way, already accepted by the villagers, to improve this sector of agricultural activity. A well designed animal health program would prevent further decline in the number of local poultry. As long as high mortality is not prevented, even the distribution of exotic breeds will not have a significant influence on the number of poultry in rural areas. The distribution of exotic breeds for approximately 20 years by the Bureau of Animal Husbandry of Iran has proved this fact. Surprisingly, the distribution of exotic breeds is still considered to be the only solution to the problem of very low numbers of poultry in the rural areas of the country.

Poultry management in villages: In all the areas surveyed, poultry are reared under a traditional extensive system. Native chickens are raised under a free range system and are sheltered in barns or farmers' houses at night. They scavenge in gardens, village alleys and surrounding farms, feeding on crop residues, seeds, insects, worms and green forage. A very small amount of grain is supplied daily by the owner. This system is by no means suitable for keeping improved breeds, either as layers or dual-purpose chickens, which have high nutritional requirements. It is very likely that this system of management and nutrition has been the main cause for the failure of the project of distributing improved breeds in the past, and there is no hope in sight for the results to be different in future attempts, unless the agencies involved realize that all the segments of this interrelated and complex system have to be simultaneously changed. Any hope of success in keeping improved breeds in the villages without a considerable change in the management practices and nutritional status is bound to fail. Native poultry are kept by the villagers not because of their production capacities, but because they do not exert any financial stress on the family. In this system, most villagers can afford little or no cash investment, and whatever output is realized is net. In other words, the strategy is to get a small return from virtually no investment.

Broody hens are used for incubating eggs in all the areas studied. The chicks produced by this method do not seem to compensate for the decline in poultry numbers caused by mortality and human consumption. Since broody hens do not produce eggs for about two to three months during mid-spring to early summer, coinciding with the most favourable environmental conditions for egg production, this system of reproduction has a two-fold effect on reducing the supply of eggs in the villages. Small kerosene-heated incubators have been used by farmers in a few villages, and there were reasons to believe that they have resulted in the expansion of exotic breeds in those areas. Egg production of native breeds is not sufficiently high to fulfill the capacity of even a small incubating machine on a regular basis. Consequently, the owner is forced to seek other sources for hatching eggs, which are usually the villages around the cities which keep exotic or crossbred poultry.

Reproductive capacity, fertility and hatchability: Out of 11917 incubated eggs, 44.5% hatched (reproductive capacity). Overall means of fertility and hatchability were 66.9 and 66.5% respectively. Reproductive capacity varied considerably among localities, ranging from 76.8% to 18.4%. Fertility and hatchability among localities ranged from 38.3 to 92.0%, and 30.7 to 91.0% respectively. The reasons for these large differences cannot be fully explained, nor this study would justify a detailed investigation of the causes. However, it could be assumed that environmental temperature of the localities, sampling season, length of time and the conditions under which eggs were stored and transported, as well as genetic, nutritional and egg weight differences between localities could have contributed to the observed variations.

CONCLUSIONS

1-Several years of experience in distributing exotic breeds, along with the existing problems in the villages with regards to poultry production, indicate that further distribution of improved breeds of poultry cannot provide even a temporary solution to the problems of inadequate animal protein supply in rural areas. High mortality rate, malnutrition and adverse environmental conditions in many areas are antagonistic to the successful raising of heavy weight or high producing types of poultry. It would be highly productive if the responsible government organizations would evaluate and understand the local poultry production systems, their limitations and opportunities, the circumstances under which such traditional systems came to existence and how they can be gradually improved. It is also essential to analyze the past attempts to find out why they failed and what can be done in order to design less risky and more productive plans for the future.

2-The most effective help that the government can provide is a well designed animal health program (vaccination against most common diseases in particular). Such a program could increase the number of native poultry and would save them from further extinction.

3-Providing a protein-mineral-vitamin mixture, to be used as a supplementary feed for chickens, would further improve poultry production in the villages. If such a mixture was to be partly subsidized by the government, it would create a balance in governmental assistance between residents of rural areas and metropolitan centers. The latter group has been subsidized by the government through facilities provided for commercial poultry producers.

4-One of the problems demanding urgent and careful consideration is the establishment of breeder stocks of native poultry populations capable of producing large numbers of hatching eggs. To fulfill this goal, establishment of a research center for several adjacent provinces would be very crucial. Such institutions could evaluate, preserve and improve productivity of native poultry, and could provide hatching eggs for small, privately owned poultry houses. Such poultry houses, which should be set up in each

province could, in turn, supply hatching eggs or day-old chicks to the villagers.

5-The poultry industry should be classified into three categories: modern large-scale commercial units, small poultry houses (which keep as many local, exotic or upgraded poultry as can be managed by one family) and traditional systems of poultry production in the villages. Each category has its own problems with their particular solutions. Household families in the rural areas normally keep a few sheep, goats, cattle, and fowl; a system which ensures more efficient use of available farm resources and family working power. Maximizing the efficiency of such a system as a whole would not necessarily mean that the efficiency of each of its components should be maximized, because devoting more time and available feed to poultry, for example, could possibly lead to a greater loss in another sector of this complex and interrelated system.

6-Based on the estimated reproductive capacity, relatively high prices paid to purchase eggs, and collection and transportation costs, it was concluded that a program based on regular purchasing of native poultry eggs and selling the resultant chicks to farmers would not be economical. There were very little, if any, which could have been done to improve the reproductive efficiency of the collected eggs in this study. The results showed that reproductive capacity of around 60 to 65% could be achieved by collecting eggs heavier than 51 g during the spring months. There are, however, some practical difficulties to do so such eggs are not very frequent (less than 15% of eggs produced in villages), and egg supply is very limited during the spring which is the brooding season. Based on time, manpower, facilities and planning devoted to this project, it is unlikely that considerable improvement could be achieved in holding time or storage conditions of purchased eggs in the future programs of this nature. Nutrition and management of poultry flocks in the villages can not be controlled. Consequently, the parameters estimated in this study are very likely to be repeated in future attempts.

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