Comprehensive Management Measures for Chicken Rearing in Tea Gardens in Karst Region

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Abstract In karst region, industrial development is closely related to rocky desertification control. Using abundant natural resources in karst areas to develop chicken rearing in tea gardens can not only make full use of natural resources and alleviate the contradiction between development and governance in rocky desertification areas but also produce good quality chicken. In this paper, the comprehensive management measures related to chicken farming in tea gardens in karst region were elaborated, in order to provide certain guiding significance for practical production.

Key words Karst region, Chicken raising in tea gardens, Comprehensive management

1 Introduction

The karst landform is widely distributed around the world, with an area of about 5.1 × 10⁶ km². The karst area of the Yunnan–Guizhou Plateau is the world’s largest and most concentrated karst landform ecological area[1], with a total area of more than 5.5 × 10⁶ km². The special geological and geomorphic conditions severely restricted the development of the local agricultural economy. Under the influence of natural and human irrational activities, a vicious circle of "population growth-cultivated land increase-grassland degradation-rocky desertification" has been formed[2]. In recent years, rocky desertification control and poverty alleviation projects have caused a large number of forest lands, grasslands, tea gardens, orchards, etc. in rural areas. It is particularly important to fully and effectively utilize existing resources to drive agricultural development. Chicken rearing in tea gardens is a chicken-raising model that combines the effective resources of the local area. Under the conditions of suitable variety and right integrated management measures, high-quality chickens can be reared, thereby promoting the development of local animal husbandry.

2 Technique of raising chickens in tea garden in karst region

2.1 Selection of variety and site The choice of chicken breed is critical to the success of farming. Chicken breeds are selected according to local climatic conditions, breeding environment, consumer market and other factors. At present, native chicken or crossbred native chicken are the preferred chicken breeds under China’s stocking mode[3]. They are characterized by resistance to rough feeding, good exercise, strong disease resistance, delicious meat, high market awareness, and easy feeding, such as Xianju chicken, Yaoshan chicken and Luhua chicken. White feather fast large chicken varieties cannot be selected.

There are many factors to be considered when choosing a stocking site. A secluded and leeward place with few natural enemies should be chosen as far as possible. When selecting the site, the following points should be paid attention to. (i) Choose the site with flat topography, low canopy and no crops around for feeding. (ii) The site should be far away from residential areas and highways to avoid unnecessary losses caused by excessive traffic of personnel vehicles. (iii) Do not choose to breed in fields contaminated by diseases or heavy metals to reduce the risk of farming. (iv) The site should be away from slaughterhouses, animal husbandry and veterinary stations and other places that are susceptible to spreading diseases to avoid the introduction of diseases and economic losses.

2.2 Construction of chicken house There are no strict requirements for the construction of chicken house. According to the topography of tea gardens, using local materials, a movable chicken house with simple structure and convenient use can be constructed. In the tea gardens in the karst region, movable chicken house made of steel, color steel tile and wooden materials is the most common form[4–5]. The length, width and height of the chicken houses are 400, 200 and 200 cm, respectively. The main body is the steel frame structure. The short side has a door, 90 cm wide and 150 cm high. The long side has a window with double-sided opening and closing structure with a width of 150 cm and a height of 100 cm. The chicken house beam, 40 cm high, is made of steel and color steel tile. The chicken house is provided with a suspended column, of which the end is 40 cm from the ground, to facilitate the cleaning of feces. The bottom of the chicken house is

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a plastic mesh structure, which is conducive to the cleaning of feces. It is divided into eight small cells, each of which is 100 cm long and 100 cm wide. Each chicken house of these specifications can accommodate 40 – 50 chickens/buildings, and 30 – 45 such chicken houses can be constructed per hectare of tea garden.

2.3 Rearing techniques
2.3.1 Stocking training. At the initial stage of stocking, chicks need to be subjected to stocking training. The chickens are released from the chicken houses every morning to let them be free to move. In the evening, they were driven back to the chicken houses with the battering device, whisking, sprinkling feed and other ways. Thus, a habit of eating outside during the day and returning to the chicken house at night will be developed in stocking chickens. This rearing method is convenient for the breeder to conduct supplementary feeding, health observation and other management of the chickens.

2.3.2 Stocking methods and density. At present, chicken stocking is often carried out in two phases[3, 6], i.e., chickens are divided into two age groups for feeding. The purpose is to make the chickens grow well at different stages under condition of adopting corresponding feeding and management method according to growth characteristics of chickens at different ages.

Chickens should be kept in houses before the age of two months, so that they can better shelter the chicks, especially in the cold winter or early spring when the climate is changeable, and the temperature difference between day and night is large, so it is especially important to cultivate healthy chicks. Robust chickens have strong disease resistance. When the average weight of the chickens reaches 1.25 – 1.50 kg, they can be subjected to the second stage. Chickens after the age of two months are placed in tea gardens for feeding. When the average weight of the chickens reaches 2.25 – 2.50 kg, they can be sold. According to related research reports, in the karst region, the reasonable stocking density of chickens in tea gardens is 3 000 chickens/ha[7].

3 Management measures
3.1 Disease prevention and control The key to epidemic management is the prevention and treatment of epidemics. In stocking mode, chickens are more likely to be exposed to pathogens and parasites[8], and disease prevention is particularly important. The farmer should regularly clean and disinfect the rearing area during the daily breeding process. Deworming treatment is usually carried out 30 d before stocking and 20 d after stocking. Chickens suspected of being sick should be isolated in time to effectively prevent the disease. More farmers do not pay attention to diseases prevention and management, resulting in a greater degree of economic losses. In serious cases, there is a risk of harm to human health.

3.2 Rotation management Rearing chickens in tea garden is to keep the chickens in the tea garden under natural conditions. The success of this rearing method largely depends on the stocking density. Excessively increasing the stocking density to blindly pursue economic benefits will cause a series of ecological problems such as biomass reduction, soil compaction, environmental pollution and vegetation destruction in tea gardens. On the other hand, high stocking density will increase the risk of diseases and make the chickens lose the ecological flavor, resulting in lower economic benefits of chicken rearing in tea gardens. Only when the stocking density matches the carrying capacity of the current feeding environment, the breeding benefits and ecological benefits maximize. Generally, chickens in the tea garden are raised in rotation once a year, no more than two years.

3.3 Nutrition level management Stocking chickens are resistant to rough feeding and have low requirements for protein. But in order to ensure the healthy growth of their bones and organs, complete compound feed should be used for feeding before the chickens are 45 d old. Appropriate amount of bone meal, fish meal, etc. should be added to the diet to supplement the trace elements needed for growth, so as to ensure the ability of the reared chickens to resist external bacteria and improve the quality of the chickens.

4 Conclusions
The development of chicken rearing in tea gardens in karst stocky desertification areas can integrate forest shrub resources, which is conducive to the governance and consolidation of rocky desertification and promotes the development of agricultural economy. Under a reasonable stocking density, the use of scientific farming techniques can increase soil fertility, promote the growth of tea, improve the quality of tea, and maximize economic and ecological benefits, contributing to the targeted poverty alleviation in karst rocky desertification areas.

References