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The Relationship between Structural Functions of Chicken Coop and Management Operating Environment

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In Taiwan native chicken industry, which worth 22.4 billion NTD (about 746 million USD), Red Feather Taiwan Chicken (RF) took 49.6% of the market. Considering the management and operation of RF industry, the structure of chicken coop, breeds of chicken, disease control and several other factors are critical elements that have strong influence on the industry. Among them, the structure of chicken coop cost over 60% of the investment and its design have significant effect on future management and operation. However, no further research conducted for the improvement of structure design of the coop and operation management.

This study was conducted in several RF chicken coops located in Yunlin, Taiwan, in Summer and Winter, and divided into two parts. First, we investigated the structure designs and air quality of the environment of different RF chicken coops that keep chickens aged over 8 weeks. Next part, we analyzed the daily tasks of the breeders in the coop. We looked forward to proposing a new coop design that can lower the operation costs and achieves higher performance, as a reference for future development.

Our study revealed that, considering management and operation of different RF chicken coop, the daily operation time is identical in both open-type and closed-type coop, which was about 9 hours a day. And patrolling took most of the time (44%), then the equipment inspection (22%), and the rest of the tasks (34% in total). If weather changed greatly, the operation time needed for an open-type coop had a considerable difference from a closed-type one, about 10% more. Also, closed-type coop with pipeline installed could save one-third of time of the one that use bell-shaped fountains. For air quality issue, the distribution of dust concentration in air are identical in closed-type coop, about 45μg/m^3. And the air exhausted from the coop had about 40μg/m^3, brought out almost 88% of the dust indoor. We found that the fan, a critical facility, worked not only for refreshing air but also for reducing the amount of dust inside the coop.

Key words: open-type chicken coop, closed-type chicken coop, management and operation, dust, Taiwan native chicken.