無線射頻辨識技術應用於平飼番鴨採食量與體重之監測

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本計畫旨在應用無線射頻辨識技術（Radio frequency identification, RFID）作為平飼番鴨生長性能監測工具之效率評估。計畫中建置具備量測鴨隻採食量與鴨隻重量之磅秤裝置、RFID 讀取器與相關感知元件，及整合系統之番鴨生長監控模組設施。當鴨隻進入該模組設施讀取區域時，可立即識別鴨隻身份，並進行鴨隻飼料量採食量及鴨隻體重之稱量、記錄及上傳。試驗分為 2 組，分別飼養 10 隻母鴨及 4 隻公鴨，監控模組及電子標籤依配掛位置分為鴨眼鏡及腳環等 2 種形式，於飼養期間觀察讀取率及電子標籤脫落率測試。結果顯示，鴨眼鏡形式及腳環形式之監控模組於 2 個月試驗期間，分別收集 6,230 及 2,170 筆資料，表示鴨眼鏡形式之讀取效果較腳環形式為佳；在脫落率方面，2 組鴨隻均無標籤脫落。在裝置的設計上面，由於公鴨與母鴨的體型差異過大，當公鴨與母鴨同時欲進行採食時，可能發生裝置中同時出現兩隻番鴨的情形。此系統可直接應用於北京鴨、相同性別之番鴨、改鴨及褐色菜鴨等鴨隻之採食量與體重監測。

關鍵詞：番鴨、採食量、無線射頻辨識技術

Application of RFID in monitoring the feed and body-weight of Muscovy duck

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The aim of this experiment was to evaluate the efficiency of application of RFID techniques in monitoring feed consumption and body weight of floor breeding Muscovy duck. A feed and body-weight monitoring module was developed, including feed and weight scales with RFID antenna, RFID tags and HMI (human machine interface), when the ducks enter the system area, the duck can be identified and the feed weight and the body weight of the duck is measured and uploaded immediately. The experiment was divided into two groups, in each group 10 female and 4 male ducks were raised, the monitoring modules and electronic tags were designed according the label location with duck glasses and foot ring. During the test the interpretation rate and shedding rate of the tags were tested. The results showed that during the two-month test period, the monitoring module collected 6,230 and 2,170 pieces of information from the duck with glass- and the foot ring-tagged group, respectively. This result indicated that read rate of the duck glass-tagged is better than that of foot ring-tagged. There was no tag loss during the test period. In the design of this device, the body size variance between male Muscovy and female Muscovy duck were large, that means one male and one female duck will enter the device at the same time which will resulted as false data. This system can work in the duck flocks with the same sex of the Muscovy ducks, Kaiya ducks and the Brown Tsaiya ducks and other ducks with similar body size.

Key words: Muscovy duck, Feed consumption, RFID