

# Effect on dissolved air flotation in dairy wastewater treatment <sup>(1)</sup>

Min-Chien Cheng <sup>(2)</sup> Tein-Ming Su <sup>(2)</sup> Tzong-Faa Shiao <sup>(3)</sup>  
Mei-Ping Cheng <sup>(2)</sup> and Ting-Hsun Hsiao <sup>(2)(4)</sup>

Received: May 6, 2015; Accepted: Sept. 10, 2015

## Abstract

The purpose of this study was to investigate the effect of dissolved air flotation (DAF) process on dairy cattle wastewater treatment with a laboratory experiment. Five hundred milliliters of wastewater after solid-liquid separator (ASL), after anaerobic digestion (AND) and after aerobic digestion (AAT) were pumped into the floatation tanks, respectively. Three different coagulant (polyaluminium chloride, PAC, cationic polymer, CPM and ferric chloride solution, FeCl<sub>3</sub>) were added into the AND and AAT, respectively. Then, 500 mL of pressurization water (5 kg/cm<sup>2</sup>) was injected into the bottom of the floatation tanks and the supernatant was sampled after 1 min to analysis suspended solid (SS) and chemical oxygen demand (COD). The results revealed that the removal efficiency on ASL was the best that removal efficiencies of COD and SS were 27.7% and 47.9 %, respectively. DAF treatment of AND and AAT with PAC (600 and 200 mg/L), CPM (100 and 26.4 mg/L) and FeCl<sub>3</sub> (100 and 30 mg/L) can meet the effluent standards. In conclusion, The DAF process can be set after the solid-liquid separation to reduce the organic loading of the following process in the full scale the dairy wastewater treatment system, while that can be set after AAT with coagulants to reduce the production of chemical sludge.

Key words: Dairy cattle, Wastewater treatment, Dissolved air flotation.

---

(1) Contribution No. 2307 from Livestock Research Institute, Council of Agriculture, Executive Yuan.

(2) Livestock Management Division, COA-LRI, Hsinhua, Tainan 71246, Taiwan, R.O.C.

(3) Animal Industry Division, COA-LRI, Hsinhua, Tainan 71246, Taiwan, R.O.C.

(4) Corresponding author, E-mail hsaosir@mail.tlri.gov.tw.