2012 24-WEEK INTERNSHIP

HY-LINE INTERNATIONAL

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COMPANY BACKGROUND

Hy-Line International is a poultry company that specializes in genetic breeding stock. Hy-Line brand laying hens produce 44 percent of the world's eggs and 85 percent of the nation's white eggs at locations worldwide. Regionally, Hy-Line employs approximately 150 people in Dallas County and has hundreds of other locations nationally and internationally. The facilities consist of three main production areas: hatchery, research farms, and cooperator farms. In 2011, Hy-Line in Dallas Center shipped more than 3.6 million live female chicks, 540,000 live male chicks and millions of hatching eggs.

PROJECT BACKGROUND

Hy-Line generates a wide variety of wastes associated with poultry production. The company produces and disposes of hatchery waste, whole eggs, liquid eggs, spent hens, manure, and manure slurry. Current waste management procedures consist of rendering, field application, incineration, feed additives, and landfilling. In this 24-week project, the intern evaluated current organic waste management practices and researched alternative solutions to minimize costs and produce environmental benefits.

INCENTIVES TO CHANGE

The goal of the internship project is to cut disposal costs by 50 percent and convert wastes to value-added products that can be used locally or internally. The resulting products could help neighboring farmers and greatly reduce disposal costs associated with Hy-Line's organic waste.

RESULTS

An organic waste baseline was generated to analyze the volumes of waste produced and how it is managed. This baseline was then used to determine the benefits of various alternatives identified. In the future, it is recommended that all organic waste continue to be tracked in a spreadsheet with costs, destinations and dates.

Anaerobic Digestion: The intern recommended that Hy-Line should investigate installing an anaerobic digester at the facility. Anaerobic digestion is the decomposition of organic materials in the absence of oxygen. It would allow for a closed-loop disposal plan for all of the company's organics. In addition to reducing costs, a digester would produce biogas capable of powering a 225 kW generator. The power produced could be used on site to significantly reduce energy bills. A digester would also produce liquid fertilizer and digestate (solid soil amendment). These products can be sold to provide additional economic benefit and are also a richer, more stable form of fertilizer than direct application of raw manure to farmland. A professional feasibility study will be done by a third-party consultant to confirm the project's viability.

In-Vessel Compost System: An alternative option for managing Hy-Line's organic waste is an in-vessel composting system. The identified system would manage all of Hy-Line's organic waste streams, avoid odor, and generate a high-quality compost product that could be used internally or marketed to other parties. Less expensive composting methods could manage Hy-Line's organic waste streams, but they do not offer such benefits as complete odor control.

Whole Eggs: Hy-Line recently became subject to a new U.S. Food and Drug Administration regulation which has resulted in more than 14 million whole eggs that can no longer be sold due to a change in storage temperature requirements. The intern identified a compost facility that can take the eggs for a fee, which could divert 1,030 tons of special waste from the landfill annually.

LED Lighting: The intern investigated the potential energy savings associated with an LED lighting retrofit in various barns and facility buildings. Experimentation was conducted to determine if LED lighting had adverse affects on a bird's health or production. The project will significantly reduce energy costs for lighting in areas where experimentation results proved favorable.

Thermal Curtain at Egg Transfer: The intern utilized a thermographic imaging camera to identify energy saving opportunities for Hy-Line's egg transfer cooler facility. Additional insulation and improved door and dock seals were recommended to reduce energy loss. Installation of an insulated curtain wall to partition the cooler would reduce the square footage being cooled and increase energy savings.

CONVENTIONAL AIR POLLUTANTS AND GREENHOUSE GASES DIVERTED IN METRIC TONS

TOTAL FOR ALL SECTORS							
CO_2	SO_2	CH_4	N_20	CFC	NO_X	VOC	PM_{10}
6,900.00	0.16	1.08	0.01	0.35	0.07	0.01	0.01

PROJECT	ANNUAL COST SAVINGS	ENVIRONMENTAL RESULTS	STATUS
ANAEROBIC DIGESTION	$239,568	10,635 TONS	RECOMMENDED
IN-VESSEL COMPOST SYSTEM	$208,732	3,580 TONS	RECOMMENDED
WHOLE EGGS	--------	1,030 TONS	IMPLEMENTED
LED LIGHTING	$2,023	18,688 KWH	RECOMMENDED
THERMAL CURTAIN AT EGG TRANSFER	$850	9,281 KWH	IN PROGRESS