Texas Dairy Matters

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LED LIGHTING FOR DAIRIES

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Well lit barns improve working conditions for employees since cows are easier to move when lighting is uniform. In addition, the accuracy of visual observations for estrous and health disorders increases when lighting is enhanced. Many dairies have used fluorescent lighting due to their increased efficiency over incandescent bulbs. Since they are more energy efficient, some producers have investigated light emitting diodes or LED lights when faced with replacing light fixtures.

LED lights are more expensive; however they have a long life, varying from 30,000 to 100,000. For a bulb that is lit 20 hours a day, the bulb wouldn't need replacement for four to nearly 14 years. Typically LED lights can operate from -4 °F to 104 °F, although some are rated to -40 °F.

For the High Plains Dairy Conference, Dr. Joe Harner indicated that LED lights are very energy efficiency, have long lives, operate well in cold temperatures and are instant-on devices tht can

be integrated into electronic controls. The main disadvantage is the significantly higher initial cost of LED compared to fluorescent or metal halide lamps.

Harner compared the cost of LED and metal halide lights installed in a low profile, cross ventilated 400 by 1000 ft building for 3600 cows. The structure had an average ceiling height of 17 feet. The cost estimates for both types of lights came from a single source and installation cost was assumed to be 50% of the cost of the lights. He used a useful life off 100,000 hours for the LED lamps. Cleaning costs for the LED lights was included.

For the building, the luminaire cost was $7.06 per hour for the LED compared to $1.93 for the metal halide; however the maintenance cost of $0.47 per hour for the LED was considerably less than the $1.93 per hour for the metal halide. Electrical costs were $11.61 per hour for LED and $17.28 per hour for metal halide. Thus the total cost estimate was $19.15 per hour for the LED compare to $21.09 per hour for the metal halide lights. If the lights were on in the cow housing area for 16 hours per day, the LED lights cost 8.5 cents per day per cow or 0.8 cents per cow per day less than the metal halide lights.

Harner did not consider any energy efficiency rebates or incentives when evaluating the cost per cow per day; which could add to the savings. Although LED lighting has not been a common alternative in dairy housing, it may be an opportunity. Although initial investment may be higher, the reduction in cost for energy and maintenance make them an option worth considering. The entire report from the conference appears on the conference website: http://www.highplainsdairy.org/ .