

THE RELATIONSHIP BETWEEN MITOCHONDRIA AND RESIDUAL FEED INTAKE IN FEEDLOT CATTLE

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ABSTRACT

Residual feed intake (RFI) is a measure of feed efficiency that is not related to an animal's growth rate or body size. Little is known about the factors that affect RFI because, until recently, the measurement of RFI in large numbers of animals was not possible.

Recently, researchers have shown a relationship in poultry between feed efficiency and measures of mitochondrial function and respiration. We hypothesized that a similar relationship existed in cattle. Steers were selected to have high or low RFI, the animals were scarified, and mitochondria were isolated from skeletal muscle. Low RFI steers had greater rates of state 2 and 3 respiration and produced more hydrogen peroxide. A blood assay was designed based on these findings to predict RFI status. The assay was able to detect differences between the high and low RFI groups; however it was not sensitive enough to correctly predict RFI status of individual animals.