

and protein diet added 47 and 2%, respectively, to the feeding value when compared with the corn control. The diet intended to reconstruct WDGS40 from fiber, protein, fat, and solubles gave similar performance for G:F ($P \geq 0.83$). However, WDGS40 cattle had greater fat ($P = 0.05$) and tended to have greater marbling ($P = 0.17$). The combination of the individual components mimics the feeding value of WDGS with the largest contributor being protein.

Key Words: fiber, protein, wet distillers' grains

doi: 10.2527/msasas2016-064

EXTENSION – DAIRY

065 A study to examine the relationship between uterine pathology and depletion of oxytetracycline in plasma and milk after intrauterine infusion.

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Metritis is a frequent problem in postpartum dairy cows. Intrauterine therapy with oxytetracycline (OTC) is often used to improve therapeutic outcomes, although efficacy data supporting this therapy are ambiguous. Several manuscripts describe the depletion of OTC from milk following intrauterine therapy. However, none of these studies have correlated uterine severity scores with milk OTC concentrations using highly sensitive detection systems. Our objective was to do this to test the hypothesis that cows with more severe uterine severity would have higher OTC residues in milk following intrauterine therapy. Thirty-two cows received a single treatment of 4 g of OTC via intrauterine infusion. Blood and milk samples were collected before intrauterine therapy and throughout the trial period of 96 h after infusion. Uterine severity scores were assigned at initiation of therapy and every 24 h throughout the remainder of the trial. Plasma and milk samples were analyzed for OTC concentrations using liquid chromatography coupled with mass spectrometry. Following treatment, OTC rapidly diffused from the uterus to plasma and from plasma to milk. Maximum concentration in plasma and milk occurred within 24 h following intrauterine infusion and 18 of the cows still had detectable levels of OTC in milk 4 d after intrauterine infusion. Greater uterine severity score at the initiation of treatment showed a significant positively correlation with higher milk OTC concentration at the second milking following treatment ($R^2 = 0.46$, $P = 0.01$) but there was no correlation between initial uterine severity score and OTC concentration at the conclusion of the study ($R^2 = -0.06$, $P =$

0.75). In the United States, intrauterine administration of OTC is considered to be an extra-label therapy. The use of uterine severity score can be used to predict OTC concentration in the first day following therapy but should not be used as a predictor of OTC concentrations 96 h after treatment. Dairy producers should consult with their veterinarian to develop strategies that will prevent the presence of violative residues of OTC in bulk tank milk following intrauterine therapy.

Key Words: bovine metritis, drug residues

doi: 10.2527/msasas2016-065

066 Midwest dairy processing needs, trends, and changes.

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The general trend in the U.S. dairy industry over the years has been that of consolidation, and this has been reflected in the Midwest as well. The total number of dairy farms in the United States has dropped approximately 66% since 1980. The whole-herd buyout program that began in 1985 to reduce the milk supply in the country and improve prices resulted in a drop in cow numbers by approximately 1 million in just 5 yr. Subsequently, in the previous 2 decades, there has been a general increase in the demand for milk products, presenting opportunities for the dairy industry. Although there have been definite differences in demand for specific products, the general trends reflect an increase. A recent study by Bliming and Associates, Inc., "Path Forward," sponsored by the Midwest Dairy Association, has shown that the Midwest has the potential to capitalize on the growing domestic and global dairy demand opportunities. According to this study, the region's existing land and water infrastructure, business climate, and capital resource availability are the key ingredients that will help support the anticipated dairy market growth of 15% by 2022. Much of this growth has already been occurring in some parts of the Midwest. For example, in South Dakota, after a decline in dairy farm numbers in the period following 1985 from 4400 to 273 in 2013 and a record low of 79,000 cows in 2004, the cow numbers have increased to 107,000 and are expected to grow further in response to anticipated processing growth and demand for products. In 2013, there were 8 cheese plants, which include 2 large cheese and whey processors, a drying facility, and several others. In response to the positive growth opportunities, a new \$100 million cheese plant was built in the state in 2014. Two existing cheese plants have also undergone substantial expansions in cheese- and whey-processing capabilities. The state ranks eighth in cheese production and accounts for approximately 24% of all cheese produced. These plants collectively manufacture natural commodity cheeses that are exported outside of the Midwest and used as table cheeses or for further processing. Other products such as dried whey ingredients, including lactose, are also manufactured, largely for export. To support this growing industry, there is a strong need for dairy graduates. The check-off funds—spon-