# Comparison of Pre- and Postpartum Performance of Holstein Dairy Cows Having either a Single or Twin Pregnancy

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## Introduction

Cows calving with twins are often associated with a myriad of health problems and subsequent poor productive and reproductive performance. Financial losses associated with a twin pregnancy stem from lost replacements, disease costs, reproductive inefficiency, and increased culling. With the twinning rate increasing in many dairy herds, any practice reducing disease prevalence, reproductive problems, or both in cows with twins will help to minimize financial losses during the subsequent lactation. However, minimal comparative data are available to address metabolic or nutritional factors, which may be responsible for the myriad of health problems associated with a twin pregnancy. Data from a previous study were used to determine if animal performance measures over the transition period were different between single- and twin-pregnancy cows.

## Materials and Methods

A study using 44 mature Holstein cows to address the effect of prepartum dietary protein supplementation on cow performance was undertaken. Of these 44 cows, six cows had a twin pregnancy (TP) and these data were compared to the 38 singleton-pregnant cows (SP). All cows were monitored from the start of the dry period through lactation, until they were confirmed pregnant or reached 120 days in milk. Dry matter intake (DMI) and milk yield was observed daily; body weight (BW) blood metabolic parameters and milk composition were determined twice or thrice weekly; and body condition score was evaluated weekly. Other animal parameters such as calf and placenta weights, disease incidence and reproductive performance were recorded.

## Results and Conclusions

Cows with a TP had lighter calf birth weights (36.8 vs. 43.3 kg; 81 vs. 95.3 lb), heavier wet placental weight (7.5 vs. 5.8 kg; 16.5 vs. 12.8 lb) and less days pregnant (275 vs. 280 days), compared to SP cows. Mean DMI tended to be lower for TP cows and started to decline at –5 wk in TP cows compared to –3 wk prior to calving in SP cows. Milk composition (fat and protein), but not yield, was reduced by TP status; however, milk production was not different. Periparturient disease incidence was greater, and reproductive intervals tended to be longer, in TP cows. Cows with TP gained less conceptus-free BW and condition prepartum, and lost more BW and condition postpartum. Lower insulin, and greater prepartum concentrations of non-esterified fatty acid (NEFA) and β-hydroxybutyrate were observed in TP cows compared to SP cows. Data from this study suggest the current model estimating gestational energy requirement does not agree with observed energy balance changes in cows with a twin pregnancy. Magnitude of negative energy balance postpartum was greater for TP cows, but not differences in postpartum metabolic profiles were found. Much of the observed health and production problems associated with twin pregnancy may result from inadequate nutrition during the prepartum period to meet fetal needs, resulting in severe maternal nutrient depletion. Feeding a prepartum diet higher in energy and protein density may help to address the lower DMI of TP cows and minimize associated health problems.