

# 1. An evaluation of fulltime and part-time pasture-based cow-calf contact systems compared to no cow-calf contact on calf health, growth and labour

Alison Sinnott<sup>12\*</sup>, Eddie Bokkers<sup>1</sup>, Emer Kennedy<sup>2</sup>

<sup>1</sup> Animal Production Systems Group, Wageningen University & Research, The Netherlands

<sup>2</sup> Teagasc, Animal and Grassland Research and Innovation Centre, Moorepark, Fermoy, Cork, Ireland

\* Corresponding author. E-mail: alison.sinnott@teagasc.ie

Calf rearing systems inhibiting cow-calf contact have been questioned lately. This study compared calves with no contact housed indoors (NC-I), part-time contact housed indoors (PT-I) and full-time contact outdoors on pasture (FT-O) and investigated calf health and growth, and labour requirements. Cows (N=55) were balanced pre-calving by parity, previous milk production and predicted calving date. NC-I calves were offered a milk replacer allowance of 6-9.5L/day via an automatic feeder. Contact pairs remained undisturbed in individual calving pens for 48h. PT-I calves had restricted access to cows indoors overnight from 15:00-8:00. PT-I cows were milked once-per-day (8:00) and grazed outdoors post-milking until returning to the calves at 15:00. FT-O calves were turned outdoors from 2.7±3.29 days old, only separated from cows for milking twice daily. All calves had *ad-libitum* access to water, concentrates and forage (hay, silage or grass). Calf average birth date was February 12 ± 16.6 days with gradual weaning occurring at 8 weeks old. Labour and health evaluations were completed twice-weekly (until week 9 and 11) alongside weekly weighing (fortnightly from 11-17 weeks). Calves had an average birth weight of 34.2±5.75kg. Calves were scored as healthy most often, however contact system calves were more likely to have poor faecal hygiene. Morbidity (calf requiring treatment for illness from 0-11 weeks) was 42% for FT-O, 17% for PT-I and 6% for NC-I calves. Illness associated complications meant 26.3% of calves in the FT-O system were removed from treatment. All calves in NC-I and PT-I systems reached weaning. From weeks 3-11, contact system calves were heavier than NC-I calves (P<0.001; 90.45±2.33kg vs 81.2±2.33kg at 11 weeks). However, from week 13-17, no differences in weight existed between the NC-I and PT-I calves (107.4±2.55kg at 17 weeks); FT-O calves remained heavier than their NC-I counterparts (P=0.025; 113.5±2.55kg at 17 weeks). Contact systems required less labour at calving (00:01:39±00:00:35), with NC-I requiring the most (00:15:56±00:00:35). Total labour for FT-O was greater (P<0.001; 00:01:22±00:00:05 per calf/day) than the NC-I and PT-I systems, which were similar (00:00:44±00:00:05 per calf/day). Despite labour efficiencies, PT-I calf growth post-weaning indicates additional stress at weaning due to de-bonding and dietary changes. Additionally, the level of morbidity and mortality in the FT-O system highlights the need to adapt pasture-based contact systems to better suit calf needs.

