

7. Bibliography

Acevedo, N., Galina, C.S., Pulido, A., Orihuela, A., 2007. Dynamics in sexually active groups of Zebu cattle (*Bos indicus*) comparing two procedures for estrus induction, *Journal of Veterinary Behavior*, 2, 5-9.

Acosta, G.K., Tarnavsky, T. E., Platt, D. L., Hamernik, J. L., Brown, H. M., Schoenemann and J. J. Reeves., 1983. Nursing enhances the negative effect of estrogen on LH Release in the cow, *Journal of Animal Science*, 57, 1530-1536.

Aguilar-Pérez, C., Vera, J.K., Castro, F.C., Garnsworthy, P.C., 2009. Energy balance, milk production and reproduction in grazing crossbred cows in the tropics with and without cereal supplementation, *Livestock Science*, 122, 227–233.

Alvarez-Rodríguez, J. A., Palacio, J., Sanz, A., 2010. Effects of nursing frequency and parity on the productive, metabolic and reproductive parameters of beef cows, *Livestock Science*, 129, 111–121.

Allbrahim, R.M., Crowe, M.A., Duffy, P., O’Grady, L., Beltman, M.E., Mulligan, F.J., 2010. The effect of body condition at calving and supplementation with *Saccharomyces cerevisiae* on energy status and some reproductive parameters in early lactation dairy cows, *Animal reproduction Science* 121, 83-71.

Amstalden, M., Harms, P.G., Welsh, T.H.Jr., Randel, R.D., Williams, G.L., 2005. Effects of leptin on gonadotropin-releasing hormone release from hypothalamic–infundibular explants, and gonadotropin release from adenohipophyseal primary cell cultures: further evidence that fully nourished cattle are resistant to leptin, *Animal Reproduction Science*, 85, 41–52.

Amstalden, M., Garcia, M.R., Williams, S.W., Stank, R.L., Nizielski, S.E., Morrison, C.D., Keisler, D.H., and Williams, G.L., 2000. Leptin Gene Expression, Circulating Leptin, and Luteinizing Hormone Pulsatility Are Acutely Responsive to Short-Term Fasting in Prepubertal Heifers: Relationships to Circulating Insulin and Insulin-Like Growth Factor I, *Biology of Reproduction* 63, 127–133.

Ayres, H., Ferreira, R. M., Torres, J. R.S.Jr., Demétrio, C.G. B., Lima, C.G., Baruselli, P. S., 2009. Validation of body condition score as a predictor of subcutaneous fat in Nelore (*Bos indicus*) cows, *Livestock Science*, 123, 175–179.

Azraqi, A.A., 2007. Effect of fasting on luteal function, leptin and steroids concentration during oestrous cycle of the goat in natural photo-status, *Animal Reproduction Science*, 98, 343–349

Bartels, H., Bohmer, M., Heierli, C., 1972. Serum creatinine determination without protein precipitation, *International Journal of Clinical Chemistry*, 37, 193-197.

Beal, W.E., Short, R.E., Staingmiller R.B., Bellows R.A., Kaltenbach C.C., Dunn, T.G., 1978. Influence of dietary energy intake on bovine pituitary and luteal function, *Journal Animal Science*, 46, 181-188.

Bearden, H.J., Fuquay, J.W., Willard, S.T. 2004. Applied Animal Reproduction, *Sixty Edition, Mississippi State University, Person practice Hall*, pp 66-40.

Bell, D.J., Spitzer, J.C. and Bums, G.L., 1998. Comparative effects of early weaning or once daily-suckling on occurrence of post-partum estrus in primiparous beef cows, *Theriogenology* 50(5), 701-715.

Belloso, E.S., Martinez, G.P., Ondiz, A.De., Rojas, N., Castilho G.S., Iglesia L.R., Ganchou F.P., 2002. Improvement of reproductive performance in crossbred zebu

anestrous primiparous cows by treatment with norgestomet implants or 96 h calf removal, *Theriogenology*, 57, 1503-1510.

Bishop, D.K., Wettemann, R.P., Spicer, L.J., 1994. Body energy reserves influence the onset of luteal activity after early weaning of beef cows, *Journal of Animal Science*, 72, 2703-2708.

Bishop, H., Pfeiffer, D., 2008. Factors effecting reproductive performance in Rwandan cattle, *Tropical Animal Health and Production*, 40, 181-184.

Block, S.S., Butler, W.R., Ehrhardt, R.A., Bell A.W., Van Amburgh, M.E., Boisclair, Y.R., 2001. Decreased concentration of plasma leptin in periparturient dairy cows is caused by negative energy balance, *Department of Animal Science, Cornell University, Ithaca, New York*, 14853-4801.

Bo, G.A., Baruselli, P.S., Martinez, M.F., 2003. Pattern and manipulation of follicular development in *Bos indicus* cattle, *Animal Reproduction Science*, 78, 307-326.

Borell, E.V., Dobson, H., Prunier, A., 2007. Stress, behaviour and reproductive performance in female cattle and pigs, *Hormones and Behavior*, 52, 130-138.

Breuel, K.F., Lewis, P.E., Inskeep, E.K., Butcher, R.L., 1993. Endocrine profiles and follicular development in early-weaned postpartum beef cows, *Journal of Reproduction and Fertility*, 97, 205-212.

Breuel, K.F., Lewis, P.E., Schrick, F.N., Lissman, A.W., Inskeep, E.K., Butcher, R.L., 1993. Factors affecting fertility in the postpartum cow: Role of the oocyte and follicle in conception rate, *Biology of Reproduction*, 48, 655-661.

Bristow D.J., Holmes, D.S., 2007. Cortisol levels and anxiety-related behaviours in cattle, *Physiology and Behavior*, 90,626-662.

Bryner, R.W., Garcia-Winder, M., Lewis, P.E., Inskip, E.K., Butcher, R.L., 1990. Changes in hormonal profiles during the estrous cycle in old lactating beef cows, *Domestic Animal Endocrinology*, 7, 181-189.

Burke, C.R., Mussard, M.L., Grumb, D.E., Day, M.L., 2001. Effects of maturity of the potential ovulatory follicle on induction of oestrus and ovulation in cattle with oestradiol benzoate, *Animal Reproduction Science*, 66 , 161–174.

Burns, B.M., Fordyce, G., Holroyd, R.G., 2010. A review of factors that impact on the capacity of beef cattle females to conceive, maintain a pregnancy and wean a calf— Implications for reproductive efficiency in northern Australia, *Animal Reproduction Science* ,122, 1–22.

Butler, W.R., 2000. Nutritional interactions with reproductive performance in dairy cattle, *Animal Reproduction Science*, 60–61,449–457

Butler W.R., 1998. Effect of protein nutrition on ovarian and uterine physiology in dairy cattle. Symposium: Optimizing Protein Nutrition for Reproduction and Lactation. *Journal of Dairy Science*, 81, 2533–2539.

Butler, W. R. 2003. Energy balance relationships with follicular development, ovulation and fertility in postpartum dairy cows. *Livestock Production Science*, 83,211–221.

Coe, B.L., Allrich, R.D., 1989. Relationship between endogenous estradiol-17 and estrous behavior in heifers, *Journal Animal Science*, 67, 1546-1551.

Convey E.M., Tucker, H.A. and Short, R.E., 1983. Acute effect of suckling on gonadotrophin ,prolactin and glucocorticoid concentration in serum of intact and ovariectomized beef cows, *Theriogenology* 20 (6), 661-674.

Crowe, M.A., Padmanaban, V., Mihm, M., Beitins, I.Z., and Roche, J.F., 1998. Resumption of follicular waves in beef cows is not associated with periparturient changes in follicle-stimulating hormone heterogeneity despite major changes in steroid and luteinizing hormone concentrations, *Biology of Reproduction* 58, 1445-1450.

Das, S.M., Redbo, I. and Wiktorsson, H., 2000. Effect of age of calf on suckling behaviour and other behavioural activities of zebu and crossbreed calves during restricted suckling periods, *Applied Animal Behavior Science*. 67, 47-57.

Das, S.M., Wiktorsson., Forsberg,M.,1999. Effects of calf management and level of feed supplementation on milk yield and calf growth of Zebu and crossbreed cattle in the semi-arid tropics, *Livestock Production Science*, 59,67-75.

Delavaud, C., Bocquieri, F., Chilliard, Y., Keisler, D.H., Gertler, A., Kann, G., 2000. Plasma leptin determination in ruminants: effect of nutritional status and body fatness on plasma leptin concentration assessed by a specific RIA in sheep, *Journal of Endocrinology*, 165, 519-526.

DeRouen, S.M., Franke, D.E., Morrison, D.G., Wyatt. W.E., Coombs, D.F., White, T., Humes, P.E. and Greene, B.B., 1994. Prepartum Body Condition and Weight Influences on Reproductive Performance of First-Calf Beef Cows, *Journal of Animal Science* 72, 1119-1125.

Deutscher, G.H., Stotts, J.A., Nielsen, M.K., 1991. Effects of breeding season length and calving season on range beef cow productivity, *Journal of Animal Science*, 69,3453-3460.

Dielemam, S.J., Bevers, M.M., Van Tol, H.T.M., Willemse, A.H., 1986. Peripheral plasma concentrations of oestradiol, progesterone, cortisol, LH and prolactin during the oestrous cycle in the cow, with emphasis on the peri-oestrous period, *Animal Reproduction Science*, 10, 275-292.

DNSV, 2010. National Directorate of Veterinary Services in Mozambique, Annual Report.

Dobson, H., Smith, R.F., 2000. What is stress, and how does it affect reproduction? *Animal Reproduction Science*, 60-61, 743-752.

Dobson, H., Tebble, J.E., Smith, R.F., 2001. Is stress really all that important? *Theriogenology* 55, 65-73.

Duarte-Ortuno, A., Thorpe, W., Tewolde, A., 1988. Reproductive performance of purebred and crossbred beef cattle in the tropics of Mexico, *Animal Production*, 47, 11-20.

Dunlap, S.E., Kiser, T.E., Rampacek, G.B., Kraeling, R.R., Thompson, F.N., 1981. Effect of suckling on cortisol, progesterone and luteinizing hormone in postpartum beef cows, *Theriogenology*, 16, 185-193.

Dunn, R.T., Smith, M.F., Garverick, H.A., Foley, C.W., 1985. Effects of 72 hr calf removal and/or gonadotropin releasing hormone on luteinizing hormone release and ovarian activity in postpartum beef cows, *Theriogenology*, 23, 767-776.

Eberhard, von B., Dobson, H., Prunier, A. (2007). Stress, behaviour and reproductive performance in female cattle and pigs, *Hormones and Behavior* 52, 130-138.

Echternkamp, S.E., 1984. Relationship between LH and cortisol in acutely stressed beef cows, *Theriogenology*, 22, 305-311.

Edmonson, A. J., I. J. Lean, L. D. Weaver, T. Farver, and G. Webster, 1989. A body condition scoring chart for Holstein dairy cows, *Journal of Dairy Science* 72:68–78.

Edwards, S. 1985. The effect of short term calf removal on pulsatile LH secretion in the postpartum beef cow, *Theriogenology*, 23:5, 777-785.

Ereno, R.L., Barreiros, T.R.R., Seneda, M.M., 2007. Pregnancy rates in milking Nelore cows submitted to progesterone treatment associated to temporary calf removal or e CG administration, *Revista Brasileira de Zootecias.*, 36, 1288-1294.

Escrivão, R.J.A., Webb, E.C., Garcês, A.P.J.T. 2009. Effects of 12 hour calf withdrawal on conception rate and calf performance of *Bos indicus* cattle under extensive conditions, *Tropical Animal Health and Production*, 41, 135-139.

Escrivão, R.J.A. 1998. Improving livestock production in Mozambique with emphasis on dairy cattle. *MSc. Dissertation, The University of Reading, UK.*

Escrivão, R.J.A., Lopes Pereira, C.M., Mota Cardoso, J.M., 1999. Improving reproductive efficiency of dairy farms in the south of Mozambique, *Ciência Técnica Veterinária* 3; 1, 2-4.

Evans, A.C.O., Keefee.P.O., Mihm,M., Roche,J.F., Macmillan,K.L., Boland, M.P.,2003. Effect of oestradiol benzoate given after prostaglandin at two stages of follicle wave development on oestrus synchronisation, the LH surge and ovulation in heifers, *Animal Reproduction Science*,76, 13-23.

Ezanno, P., Ickowicz, A., Lancelot, R., 2005. Relationships between N'Dama cow body condition score and production performance under an extensive range management system in Southern Senegal: calf weight gain, milk production, probability of pregnancy, and juvenile mortality, *Livestock Production Science*, 92, 291–306.

Fanning, M.D., Lunt, D.K., Sprott, L.R., Forrest, D.W., 1995. Reproductive performance of synchronized beef cows as affected by inhibition of suckling with nose tags or temporary calf removal, *Theriogenology*, 44, 715-723.

Flores, R., Looper, M. L., Rorie, R. W., Hallford, D. M. and Rosenkrans, C. F. Jr. 2008. Endocrine factors and ovarian follicles are influenced by body condition and somatotropin in postpartum beef cows, *Journal of Animal Science*, 86:1335-1344.

Food and Agriculture Organization of the United Nations (FAO), 2005. Livestock sector brief Mozambique, *Livestock Information, sector analysis and policy branch*. AGAL

Ford, J.J. and Melampy, R.M., 1973. Gonadotropin level in lactating rats: Effect of ovariectomy, *Endocrinology* 93, 540-547 (cited by Garcia-Winder et al., 1986).

Forde, N., Beltman, M.E., Lonergan, P., Diskin, M., Roche, J.F., Crowe, M.A., 2011. Oestrous cycles in *Bos taurus* cattle, *Animal Reproduction Science*, 124, 163–169.

Galina, C.S., Orihuela, A., 2007. The detection of estrus in cattle raised under tropical conditions: What we know and what we need to know, *Hormones and Behavior*, 52, 32–38.

Galindo-Gonzalez, s., Arthington, J.D., Yelich, J.V., Hansen, G.R., Lamb, G.C., Vries, A. De, 2006. Effects of cow parity on voluntary hay intake and performance responses to early weaning of beef calves, *Livestock Science*, 110, 148-153.

Garcia-Winder, Imakawa, M. K., Day, M. L., Zalesky, D. D., Kittok, R. J. and Kinder, J.E. 1986. Effects of suckling and low doses of estradiol on luteinizing hormone secretion during the postpartum period in beef cows, *Domestic Animal Endocrinology* 3:79.

Gazal, O.S., Guzman-Vega, G.A. and Williams, G.L., 1999. Effects of time of suckling during the solar day on duration of the postpartum anovulatory interval in Brahman X

Geary, T.W., Whittier, J.C., Hallford, D.M. and MacNeil, M.D., 2001. Calf removal improves conception rates to the Ovsynch and CO-Synch protocols, *Journal of Animal Science* 79, 1-4.

Gier, H.T., Marion, G.B., 1968. Uterus of the cow after parturition, involutinal changes, *American Journal of Veterinary Research*, 29, 83-96.

Goyache, F., Gutierrez, J.P., Fernandez, I., Royo, L.J., Alvarez, I., 2005. Genetic analysis of days open in beef cattle, *Livestock Production Science*, 93, 283-289.

Grimard, B., P. Humblot, A. A. Ponter, J. P. Mialot, D. Sauvant, and M. Thibier. 1995. Influence of postpartum energy restriction on energy status, plasma LH and oestradiol secretion and follicular development in suckled beef cows, *Journal of Reproduction and Fertility* 104:173–179.

Grossi, D.A., Frizzas, O.G., Paz, C.C.P., Bezerra, L.A.F., Lôbo, R.B., Oliveira, J.A., Munari, D., 2008. Genetic associations between accumulated productivity and reproductive and growth traits in Nelore cattle, *Livestock Science* 117, 139-146.

Hammons, J.M., Velasco, M., Rothchild, I. 1973. Effect of sudden withdrawal or increase in suckling on serum LH levels in ovariectomized postparturient rats, *Endocrinology* 92, 206-211 (cited by Garcia-Winder et al., 1986).

Henricks,D.M., Dickey,J.F.,1970. Serum Luteinizing Hormone and Plasma Progesterone Levels During the Estrous Cycle and Early Pregnancy in Cows¹, *Biology of Reproduction*, 2,346-335.

Herd, D. B., and. Sprott , L. R. 1986. Body condition, nutrition, and reproduction of beef cows. No. B-1526. *Texas AandM University Agricultural Extension, College Station, Texa.s*

Hoffman,D.P., Stevenson,J.S., Minton,J.E.,1996. Restricting calf presence without suckling compared with weaning prolongs, *Journal of Animal Science*, 74, 190-198.

Hopkins, F.M. and Spitzer, J.C. 1997. The New Society for Theriogenology Breeding Soundness Evaluation System, *Theriogenology* 13, 2, 283-293.

Houghton, P.L.,Lemeneger,R.P., Moss,G.E., Hendrix,K.S.,1990. Prediction of Postpartum Beef Cow Body Composition Using Weight to Height Ratio and Visual Body Condition Score, *Journal of Animal Science*, 1428-1437.

Kanuya, N.L., Matiko, M.K., Kessy, B.M., Mgongo, F.O., Ropstad, E., Reksen, O., 2006. A study on reproductive performance and related factors of zebu cows in pastoral herds in a semi-arid area of Tanzania, *Theriogenology*, 65, 1859–1874.

Kaplan, E.L.; Meier, Paul, 1958. Nonparametric estimation from incomplete observations. *Journal of American Statistic Association*. 53, 457-481.

Koolhaas,J.M. Korte,S.M.,De Boer,S.F.,Van Der Veg, B.J., Van Reerien,C.G., Hospster,H., De Jong,I.C., Ruis,M.A.W.,Blokhuys,H.J.,1999. Coping styles in animals: current status in behavior and stress-physiology, *Neuroscience and Behavioral Reviews*, 23,925-935.

Lamb, G.C., Miller, B.L., Lynch, J.M., Thompson, K.E., Heldt, J.S., Loest, C.A., Grieger, D.M., and Stevenson, J.S., 1999. Twice daily suckling but not milking with calf presence prolongs postpartum anovulation, *Journal of animal Science*, 77, 2207-2218.

Lamb, G.C., Lynch, J.M., Grieger, D.M., Minton, J.E., Stevenson, J.S., 1997. Ad libitum suckling by an unrelated calf in the presence or absence of a cow's own calf, *Journal Animal Science*, 75, 2762-2769.

Landaeta-Hernandez, A.J., Yelich, J.V., Lemaster, J.W., Fields, M.J., Tran, T., Chase Jr., C.C., Rae, D.O., Chenoweth, P.J., 2002. Environmental, genetic and social factors affecting the expression of estrus in beef cows, *Theriogenology* 57, 1357-1370.

Lanflamme, L.F. and Connor, A., 1992. Effects of post-partum nutrition and cow body condition at parturition on subsequent performance of beef cattle. *Canadian Journal of Animal Science* 72, 843-851.

Lopes, A.S., Butler, S.T., Gibert, R.O., Butler, W.R., 2007. Relationship of pre-ovulatory follicle size, estradiol concentrations and season to pregnancy outcome in dairy cows, *Animal Reproduction Science*, 99, 34-43.

Lyimo, Z.C., Nielen, M., Ouweltjes, W., Kruip, T.A.M., Van Erdenburg, F.J.M., 1999. Relationship among estradiol, cortisol and intensity of estrous behavior in dairy cattle, *Theriogenology* 53, 1783-1795.

Ludwik K. Malendowicz, Marcin Rucinski, Anna S. Belloni, Agnieszka Ziolkowska and Gastone G. Nussdorfer, 2007. Leptin and the Regulation of the Hypothalamic-Pituitary-Adrenal Axis, *International Review of Cytology*, Volume 263 ISSN 0074-7696, DOI: 10.1016/S0074-7696(07)63002-2

Machado, R., Bergamaschi, M.A.C.M., Barbosa, R.T., de Oliveira C.A., Binelli, M. 2008. Ovarian function in Nelore (*Bos taurus indicus*) cows after post-ovulation hormonal treatments, *Theriogenology* 69, 798–804.

Macmillan, K.L., Segwagwe, B.V.E., Pino, C.S., 2003. Associations between the manipulation of patterns of follicular development and fertility in cattle, *Animal Reproduction Science*, 78, 327-344.

Mandlate, F. (1985) – Problems of animal fertility in Mozambique, *Proceedings of Livestock Production Seminar, Ministerio de Agricultura and FAO*.

Maneghetti, M., Filho, O.G.S., Peres, R.F.G., Lamb, G.C., Vasconcelos, J.L.M., 2009. Fixed-time artificial insemination with estradiol and progesterone for *Bos indicus* cows I: Basis for development of protocols, *Theriogenology*, 72, 179–189.

Marongiu, M.L., Molle, G., San Juan, L., Bomboi, G., Ligios, C., Sanna, A., Casu, S., Diskin, M.G., 2002. Effects of feeding level before and after calving, and restricted suckling frequency on postpartum reproductive and productive performance of Sarda and Charolais X Sarda beef cows, *Livestock Production Science*. 77, 339-348.

Marshall, D.M., Minqiang, W. And Freking, B.A. 1990. Relative calving date of first-calf heifers as related to production efficiency and subsequent reproductive performance, *Journal of Animal Science* 68, 1 812-1 817.

Martinez, M.F., Kastelic, J.P., Bo, G.A., Caccia, M., Mapletoft, R.J., 2005. Effects of estradiol and some of its esters on gonadotrophin release and ovarian follicular dynamics in CIDR-treated beef cattle, *Animal Reproduction Science* 86, 37–52.

McCartney, D.H., Spurr, D.T., Cates, W.F., Barth, A.D., Mapletoft, R.J. 1990. The effectiveness of 48-hour calf removal, Syncro- Mate-B or prostaglandin treatments in advancing the breeding season of beef cows, *Theriogenology* 34:6, 1139-1148.

Morrison, D.G., Spitzer, J.C. and Perkins, J.L., 1999. Influence of prepartum body condition score change on reproduction in multiparous beef cows calving in moderate body condition score, *Journal of animal Science* 77, 1048-1053.

Mulleder,C., Palme, R., Menke.C. Waiblinger, S., 2003. Individual differences in behaviour and in adrenocortical activity in beef-suckler cows, *Animal Behavioral Science*, 84,167–183.

Murrieta, C.M., Hess, B.W., Lake, S.L., Scholljegerdes, E.J., Rule, D.C., 2010. Body condition score and day of lactation regulate fatty acid metabolism in milk somatic cells and adipose tissue of beef cows, *Livestock Science*, 131, 65–72.

Murphy, M.G., Boland, M.P., Roche, J.F., 1990. Pattern of follicular growth and resumption of ovarian activity in post-partum beef suckler cows. *Journal of Reproduction and Fertility*, 90, 523–533.

Naazie, A.; Makarechian, M. and Hudson, R.J., 1999. Evaluation of Life-Cycle Herd Efficiency in Cow-Calf System of Beef Production, *Journal of Animal Science* 77, 1-11.

Naazie.A., Makarechian,M., Hudson,R.J.,1997.Efficiency of Beef Production Systems: Description and Preliminary Evaluation of a Model, *Agricultural Systems*, 54,357-380.

Nathan, M. 1966. Evaluation of survival data and two new rank order statistics arising in its consideration, *Cancer Chemotherapy Reports* 50 (3): 163–70.

Ndlovu,T., Chimonyo,M., Okoh,A.I., Muchenje,V., Dzama,K., Raats,J.G., 2007 Assessing the nutritional status of beef cattle: current practices and future prospects, *African Journal of Biotechnology*, 6 ,2727-2734.

Nett, T. M., D. Cermak, T. Braden, J. Manns and G. Niswender. 1988. Pituitary receptors for GnRH and estradiol, and pituitary content of gonadotropins in beef cows. 11. Changes during the postpartum period, *Domestic Animal Endocrinology*, 5, 81.

Nqeno, N., Chimonyo, M., Mapiye, C., Marufu, M.C., 2010. Ovarian activity, conception and pregnancy patterns of cows in the semiarid communal rangelands in the Eastern Cape Province of South Africa, *Animal Reproduction Science*, 118, 140–147.

Nunez-Dominguez, R.; Cundiff, L.V.; Dickerson, G.E.; Gregory, K.E. and Kock, R.M. ,1991. Lifetime Production of Beef Heifers Calving First at Two Vs Three Years of Age, *Journal of Animal Science* 69, 3467-3479.

Odde, K.G., Kiracofe, G.H., Shalles, R.R. 1986. Effects of forty-eight-hour calf removal, once or twice-daily suckling and nergostomet on beef cow and calf performance, *Theriogenology* 26:3, 371-381.

Oddec,K.G., Wardc,H.S., Kiracofec,G.H., MckeeC,R.M., Kittokd,R.J., 1980, Short estrus cycles and associated serum progesterone, *Theriogenology*, 14, 2.

Oliveira, C.M.G., Filho, B.D.O., Gambarini, M.L., Viu, M.A.O., Lopes, D.T, Sousa, A.P.F., 2009. Effects of biostimulation and nutritional supplementation on pubertal age and pregnancy rates of Nelore heifers (*Bos indicus*) in a tropical environment, *Animal Reproduction Science*, 113, 38–43.

Osoro, K. and Writght, I.A., 1992. The effect of body condition, live weight, breed, age, calf performance and calving date on reproductive performance of spring-calving beef cows. *Journal of animal Science* 70, 1661-1666.

Paranhos da Costa, M.J.R., Albuquerque, L.G., Eler, J.P., Silva, J.A.II.V., 2006. Suckling behaviour of Nelore, Gir and Caracu calves and their crosses, *Applied Animal Behavioral Science* 101, 276-287.

Perea, F.P., Ondiz, A.D., Palomare, R.A., Hernández, H.J. b, González, R., Soto, E.R. 2008. Control of postpartum anestrous with an intra-vaginal progesterone device plus eCG or calf removal for 120 h in suckled crossbred cows managed in a pasture-based system, *Animal Reproduction Science* 106, 298–310.

Pérez-Hernández, P., Garcia-Winder, M., Gallegos- Sanchez, J., 2002. Postpartum anoestrus is reduced by increasing the within-day milking to suckling interval in dual purpose cows. *Animal Reproduction Science* 73, 159-168.

Peters, A.R.; Lamming, G.E. and Fisher, M.W., 1981. A comparison of plasma LH concentration in milked and suckling post-partum cows. *Journal of Reproduction and Fertility* 62:567-573.

Pieres, H.; Elliott, R.; Hales, J.W. and Norton, B.W., 1995 – Alternative Management Strategies for Maximizing Productivity in Beef Cattle in Subtropics, *Australian Journal of Experimental Agriculture*, 35:317-324.

Pinheiro, V.G., Souza, A.F., Pegorer, M.F., Satrapa, R.A., Ereno, R.L., Trinca, L.A., Barros, C.M., 2009. Effects of temporary calf removal and eCG on pregnancy rates to timed-insemination in progesterone-treated postpartum Nelore cows, *Theriogenology*, 71, 519–524.

Portillo, G.E., Bridges, G. A., Araujo, J.W., Shaw, M.K.V., Schrick, F.N., Thatcher, W.W., Yelich, J.V., 2008. Response to GnRH on day 6 of the estrous cycle is diminished as the percentage of Bos indicus breeding increases in Angus, Brangus, and Brahman×Angus heifers, *Animal Reproduction Science*, 103, 38–51.

Quintans, G., Banchero, G., Carriquiry, M., Lopez-Mazz, C., Baldi, F. 2010. Effect of body condition and suckling restriction with and without presence of the calf on cow and calf performance, *Animal Reproduction Science* 50, 10:931-938.

Quintans, G., Vázquez, A.I. Weigel, K.A., 2009. Effect of suckling restriction with nose plates and premature weaning on postpartum anestrous interval in primiparous cows under range conditions, *Animal Reproduction Science*, 116, 10–18.

Quintans, G., Viñoles, C., Sinclair, K.D. 2004. Follicular growth and ovulation in postpartum beef cows following calf removal and GnRH treatment. *Animal Reproduction Science* 80, 5-14.

Radford, H. M.. C. D. Nancmow and P. E. Maimer, 1978. Ovarian function in suckling and non-suckling beef cows post partum, *Journal of reproduction and fertility*, 54, 49.

Randel, R.D., 1990. Nutrition and post-partum rebreeding in cattle, *Journal of Animal Science*, 853–862.

Randel, R.D., 1981. Effect of once-daily suckling on post-partum interval and cow-calf performance of first-calf Brahman×Hereford heifers. *Journal of Animal Sciences*, 53, 755–757.

Reeves, J. J. and Gaskins, C. T., 1981. Effect of once-a-day nursing on rebreeding efficiency of beef cows. 3, *Journal of Animal Science*, 53, 889-891

Renquist, B.J., Oltjen, J.W, Sainz, R.D., Calvert, C.C., 2006. Relationship between body condition score and production of multiparous beef cows. *Livestock Science* 104, 147-155.

Rocha, A., Dionísio A.C., Mutsando A., 1988. Subsistence cattle production systems in the Mazimichopes river zone compared to other traditional production systems in Africa. *Ministry of Agricultura, Animal Production Institute, Maputo-Mozambique*.

Roche, J. R., Friggens, N. C., Kay, J. K., Fisher, M. W., Stafford, K. J. and Berry, D. P., 2009. Invited review: Body condition score and its association with dairy cow productivity, health, and welfare, *J. Dairy Sci.* 92:5769–5801.

Rutter, L.M. and Randel, R.D., 1984. Postpartum nutrient intake and body condition: Effect on pituitary function and onset of oestrus in beef cattle. *Journal of Animal Science* 58:2:265-273.

Sá Filho, M.F., Santos, J.E.P., Ferreira, R.M., Sales, J.N.S., Baruselli, P.S., 2011. Importance of estrus on pregnancy per insemination in suckled *Bos indicus* cows submitted to estradiol/progesterone-based timed insemination protocols, *Theriogenology*, 76, 455–463.

Salfen, B.E., Kojima, F.N., Bader, J.F., Smith, M.F. and Garverick, H.A. 2001. Effect of short term calf removal at three stages of follicular wave on fate of dominant follicle in postpartum beef cows. *Journal of Animal Science* 79, 2688-2697.

SAS, 1996. Statistical Analysis System User's Guide. *Version 6.12. SAS Institute Inc., Cary, North Carolina, USA*.

Satrapa, R.A., Pinheiro, V.G., Ereno R.L., Membrive C.M.B., Piagentini, M., Binelli, M., and Barros, C.M., 2010. 13,14-Dihydro-15-Keto Prostaglandin F2a Release in Response to Oxytocin Challenge Early Post-Partum in Anoestrous Nelore Cows Submitted to Temporary Calf Removal and Progesterone Priming, *Reproduction in Domestic Animals*, 45, 881-887.

Schillo, K.K.; Hall, J.B. and Hileman, S.M., 1992 - Effects of Nutrition and Season on the Onset of Puberty in the Beef Heifer, *Journal of Animal Science* , 70: 3994-4005.

Schröder, U. J. and Staufenbiel, R., 2006. Invited Review: Methods to determine body fat reserves in the dairy cow with special regard to ultrasonographic measurement of backfat thickness, *J. Dairy Sci.* 89:1–14.

Schwalback, L.M.J., Greyling, J.P.C. and Taylor, G.J., 2000. Postpartum reproductive tract score in beef cows – a proposed method. *South African Journal of Animal Science*, suppl. 1, 120-121.

Schwalback, L.M.J., Lopes Pereira, C.M., Escrivão, R.J.A. , Mota Cardoso, J.M., 1997.Determination of body condition and its relation with fertility in five beef cattle farms in Mozambique.*Veterinária Tecnica* 5, 18-20.

Short, R. E., R. A. Bellows, R. B. Staigmiller, J. G. Berardinelli and E. E. Custer. 1990. Physiological mechanisms controlling anestrus and infertility in postpartum beef cattle, *Journal of Animal Sciences* 68:799–816.

Shimada, K., Izaike, Y., Suzuki, O., Kosugiyama, M., 1989. Effects of breed, calf age, sex, parity and season on suckling behaviour in beef cattle. *Japanese Journal of Zootechnic. Sciences.* 60 (10), 908-915.

Sidibé-Anago,A.G., Ouedraogo,G.A., Ledin,I.,2007. Effect of suckling period on calf growth and milk yield of Zebu cows, *Tropical Animal Health Production*,40, 491-499.

Spitzer, J.C.; Morrison, D.G.; Wettemann, R.P. and Faulkner, L.C. (1995) – Reproductive Response and Calf Birth and Weaning Weights as Affected by Body Condition at Parturition and Postpartum weight gain in Primiparous Beef Cows, *Journal of Animal Science* 73,1251-1257.

SPSS, 2005. SPSS version 14.0 for Windows. SPSS Inc. USA (www.spss.com)

Stewart, I.B., Louw, B.P., Lishman, A.W., 1993a. Suckling behaviour and fertility in beef cows on pasture, 1. Suckling behaviour. *South African Journal of Animal Science* 23 5/6, 176-179.

Stewart, I.B., Louw, B.P., Lishman, A.W., 1993b. Suckling behaviour and fertility in beef cows on pasture, 2. Influence of twelve hours calf separation on interval to first oestrus after onset of mating period. *South African Journal of Animal Science* 23 5/6, 180-182.

Tokuda, T., Matsui, T., Yano, H., 2000. Effects of light and food on plasma leptin concentrations in ewes, *Animal Science*, 71, 235–242.

Tietz, N.W., 1995. Clinical Guide to Laboratory Tests, (3rd Ed.) WB Saunders Company, Philadelphia, PA.

Timberlake, J., 1985 – Natural Pastures in Mozambique, *Proceedings of Livestock Production Seminar, Ministerio de Agricultura and FAO*.

Vasconcelos, J.L.M., Filho, O.G.S., Perez, G. C., Silva, A.T.N., 2009. Intravaginal progesterone device and/or temporary weaning on reproductive performance of anestrous crossbred Angus×Nelore cows, *Animal Reproduction Science*, 111, 302–311.

Wade, G.N., Schneider, J.E., Li, H.Y., 1996. Control of fertility by metabolic cues. *American Journal of Physiology*, 270, 1–19.

Walker, S.L., Smith, R.F., Jones D.N., Routly, J.E., Dobson, H., 2008. Chronic stress, hormone profiles and estrus intensity in dairy cattle, *Hormones and Behavior*, 53, 493-501.

Walters, D.L., Smith, M.F., Harms, P.G. and Wiltbank, J.N. 1982. Effects of steroids and /or 48 hr calf removal on serum luteinizing hormone concentration in anestrous beef cow. *Theriogenology*, 18:3, 349-356.

Walters. D. L.. R. E. Short. E. M. Convey. R. B. Staigmiller, T. G. DUM and C. C. Kaltenbach. 1982b. Pituitary and ovarian function in postpartum beef cows. 11. Endocrine changes prior to ovulation in suckled and nonsuckled postpartum cows compared to cycling cows. *Biology of Reproduction* 26, 647.

Wathes, D.C., Cheng, Z., Bourne, N., Taylor, V.J., Coffey, M., Brotherstone, S., 2007. Differences between primiparous and multiparous dairy cows in the inter-relationships between metabolic traits, milk yield and body condition score in the periparturient period, *Domestic Animal Endocrinology*, 33, 203–225.

Whisnant, C.S., Kiser, T.E., Thompson, F.N. 1985. Effect of calf removal on serum luteinizing hormone and cortisol concentrations in postpartum beef cows. *Theriogenology* 24:1, 119-128.

Wiklund,E., Andersson,A., Malmfors, G., Lundstriim, K., 1996. Muscle Glycogen Levels and Blood Metabolites in Reindeer (*Rangifer tarandus tarandus* L.) After Transport and Lairage, *Meat Science*, 42, 133-144.

Williams, G.L., 1990. Suckling as a regulator of postpartum rebreeding in cattle: a review. *Journal of Animal Science*, 68, 831–852.

Wiltbank, J.N., 1991. Body Condition score in Beef Cattle, In: Large Animal Clinical Nutrition. Ed. Naylor JM, Ralston SI, *Baltimore Mosby-Year Book Inc. pp. 196-178.*

Yavas, Y., Walton, J.S., 2000. Induction of ovulation in postpartum suckled beef cows: a review. *Theriogenology* 54,1–23.

Yelich,J.V.,Holland,M.D., Schutz,D.N.,Odde,D.N.,1995.Syncronization of estrus in suckled postpartum beef cows with melengestrol Acetate, 48 hour calf removal and PGF, *Theriogenology*, 43,401-410.

Yokoo, M.J.; Albuquerque, L.G, Lôbo, R.B.; Bezerra, L.A.F.; . Araujo, F.R.C.; Silva, J.A.V.; Sainz, R.D. 2008.Genetic and environmental factors affecting ultrasound measures of longissimus muscle area and backfat thickness in Nelore cattle, *Livestock Science* 117, 147–154.

Zhang, Y., Proenca, R., Maffei, M., Barone, M., Leopold, L., Friedman, J.M., 1994. Positional cloning of the mouse obese gene and its human homologue. *Nature* 372, 425–432.

Zhang, J., Deng, L.X., Zhang, H.L., Hua, G.H., Han, L., Zhu, Y., Meng, X.J. and Yang, L. G., 2010. Effects of parity on uterine involution and resumption of ovarian activities in postpartum Chinese Holstein dairy cows, *J. Dairy Sci.* 93: 1979–1986.