In the above graph, boxes represent stocks of animals, pipes show flows or rates of change, and the rest are auxiliary variables. Blue arrows represent the flow of information between stocks and variables. The convention is that stocks are identified with capital letters; all others in lower case letters.
Beef cattle reproduction on *Urochloa humidicola*

Appendix 2.

The above graphs show examples of model outputs.
Appendix 3.

Model equations. As per convention, stocks are identified in capital letters, all others in lower case letters. Per convention, models begin at t=0.

(01) \[ \text{FINAL TIME} = 11 \]
    Units: Month
    The final time for the simulation.

(02) \[ \text{gain weight} = \text{table wgt gain(Time)} \]
    Units: kg/Month

(03) \[ \text{get pregnant} = \text{HEIFERS} \times \text{prob preg} \]
    Units: number/Month

(04) \[ \text{HEIFERS} = \text{INTEG} (-\text{get pregnant} - \text{loss}, \text{Initial number of heifers}) \]
    Units: number

(05) \[ \text{INFERTILE HEIFERS} = \text{INTEG} (\text{loss}, 0) \]
    Units: number

(06) Initial LW = 240
    Units: kg

(07) Initial number of heifers = 100
    Units: number

(08) \[ \text{INITIAL TIME} = 0 \]
    Units: Month
    The initial time for the simulation.

(09) \[ \text{loss} = \text{HEIFERS} \times \text{rate of losses} \]
    Units: number/Month

(10) \[ \text{LW} = \text{INTEG} (\text{gain weight}, \text{Initial LW}) \]
    Units: kg

(11) \[ \text{PREGNANT HEIFERS} = \text{INTEG} (\text{get pregnant}, 0) \]
    Units: number

(12) \[ \text{prob preg} = \text{IF THEN ELSE} (\text{Time}<4.0,(1/(1+\text{EXP}(6.67251-0.0208803 \times \text{LW})))) \]
    Units: dimensionless

(13) \[ \text{rate of losses} = 0.01/11 \]
    Units: dimensionless

(14) \[ \text{SAVEPER} = 0.25 \]
    Units: Month
    Saving and integration period

\textit{Note}: Monthly weight gains in the table that follows are shown enclosed in curved parenthesis, with the first number indicating the month and the second one kg of gain per month

(15) \[ \text{table wgt gain} = [(0,0)-(11,20)],(0,1),(1,-2),(2,-3),(3,4),(4,8),(5,10),(6,13),(7,18),(8,11),(9,6),(10,3),(11,1)] \]
    Units: kg/Month

(16) \[ \text{TIME STEP} = 1 \]
    Units: Month