HERDYN: a dynamic model to simulate herd dynamics in beef cattle extensive systems

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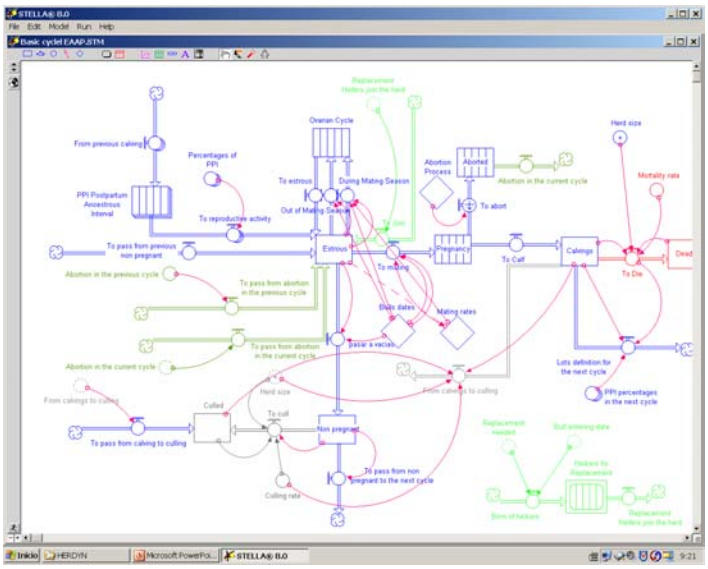
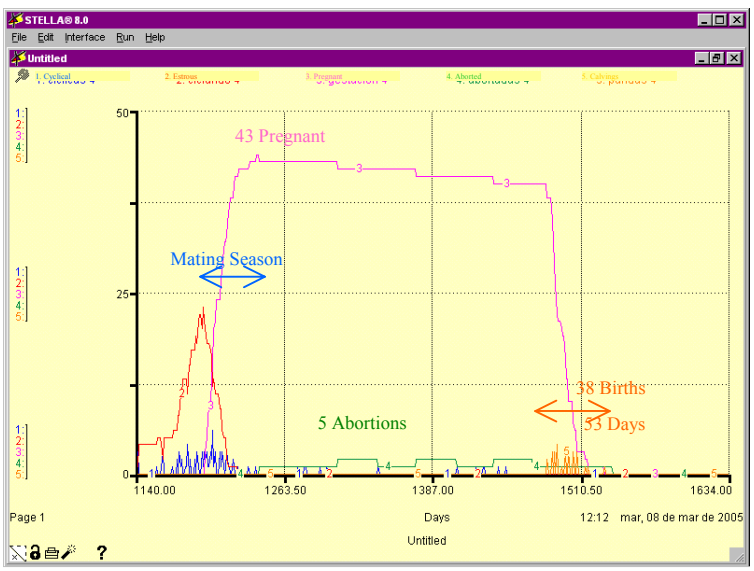
Framework: design a Decision Support System for extensive mountain cattle systems, linking pasture growth, cow-calf, herd dynamics and optimisation models

Objective: to build a stochastic dynamic model that simulates beef cattle herd dynamics in the medium/long run, under a wide range of management conditions

Methods:

- link of nutrition and reproduction: **Body Condition Score** at calving and **Postpartum Anoestrous Interval (PPI)**
- Animals classified in PPI groups
- Ovarian cycle (21 days) is simulated
- Management variables: mating season, no. of bulls, replacement, culling
- Stochastic variables: bull fertility, mortality, abortions, pregnancy length
- Software: Stella 8.0 v. Research





Results (example):

- Initial Herd Size = 47 cows
- PPI (input from cow model):
  - 50% with 45 days
  - 20% with 60 days
  - 15% with 90 days
  - 10% with 150 days
  - 5% with 300 days
- Bulls management:
  - 2 bulls (90% fertility)
  - mating period (10 April-10 June)

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