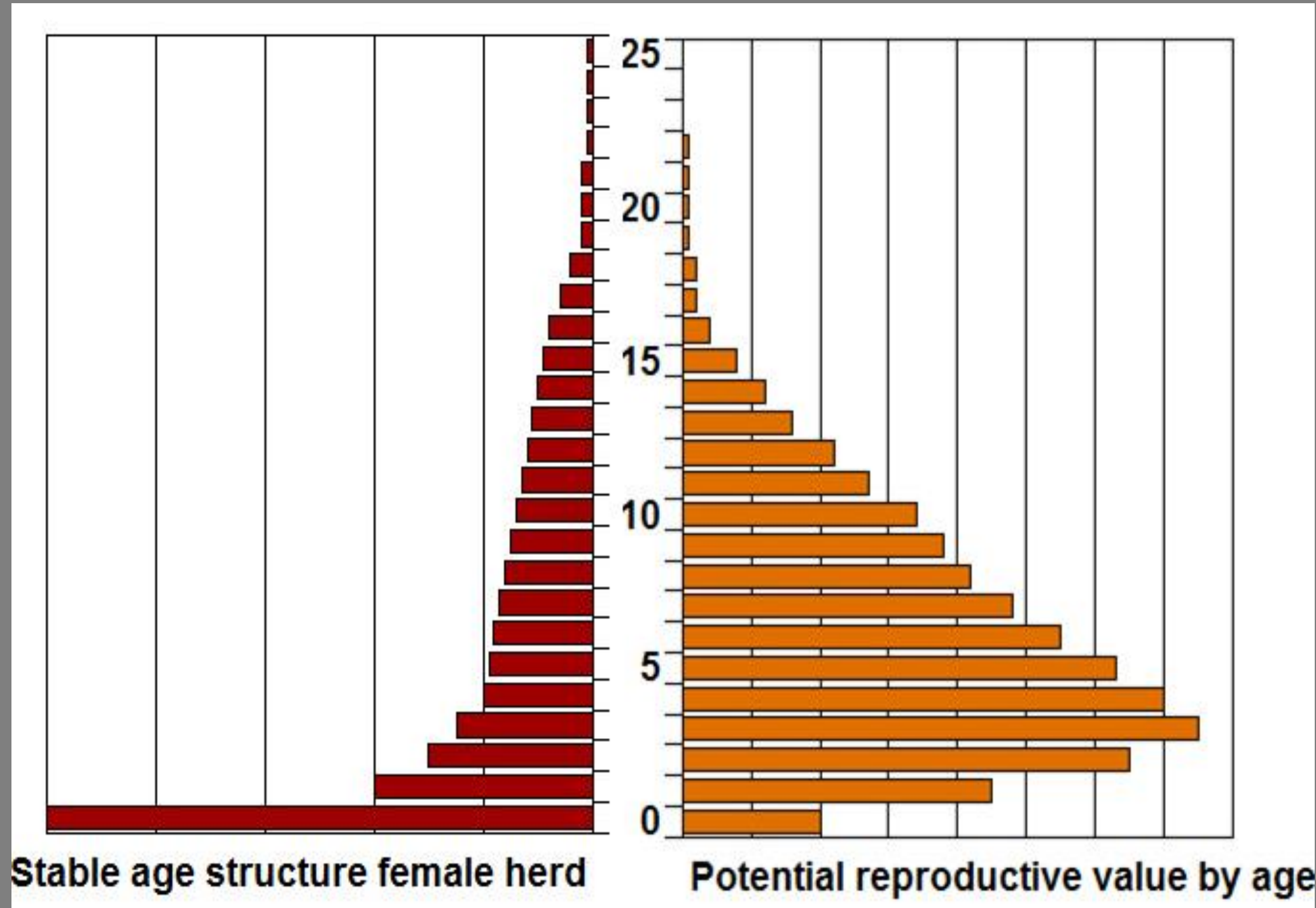




Herd Growth and Population Development in Camels (C. dromedarius) - A Neglected Research Agenda?

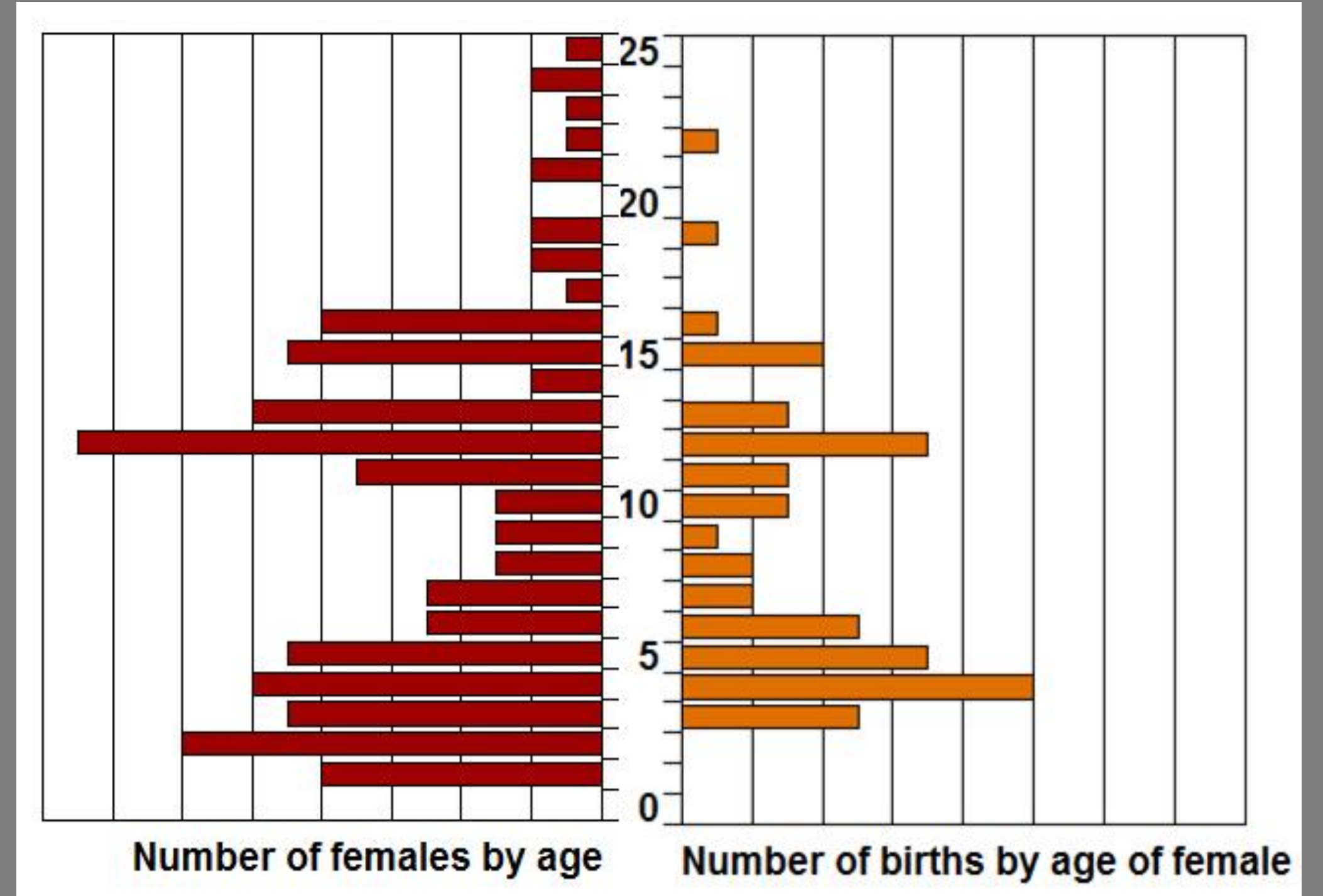
Horst Jürgen Schwartz* and Anas Sarwar Qureshi**

*Humboldt University of Berlin, Germany; **University of Agriculture Faisalabad, Pakistan



Theoretical stable age structure of the females in a camel herd and resulting reproductive value of each age class

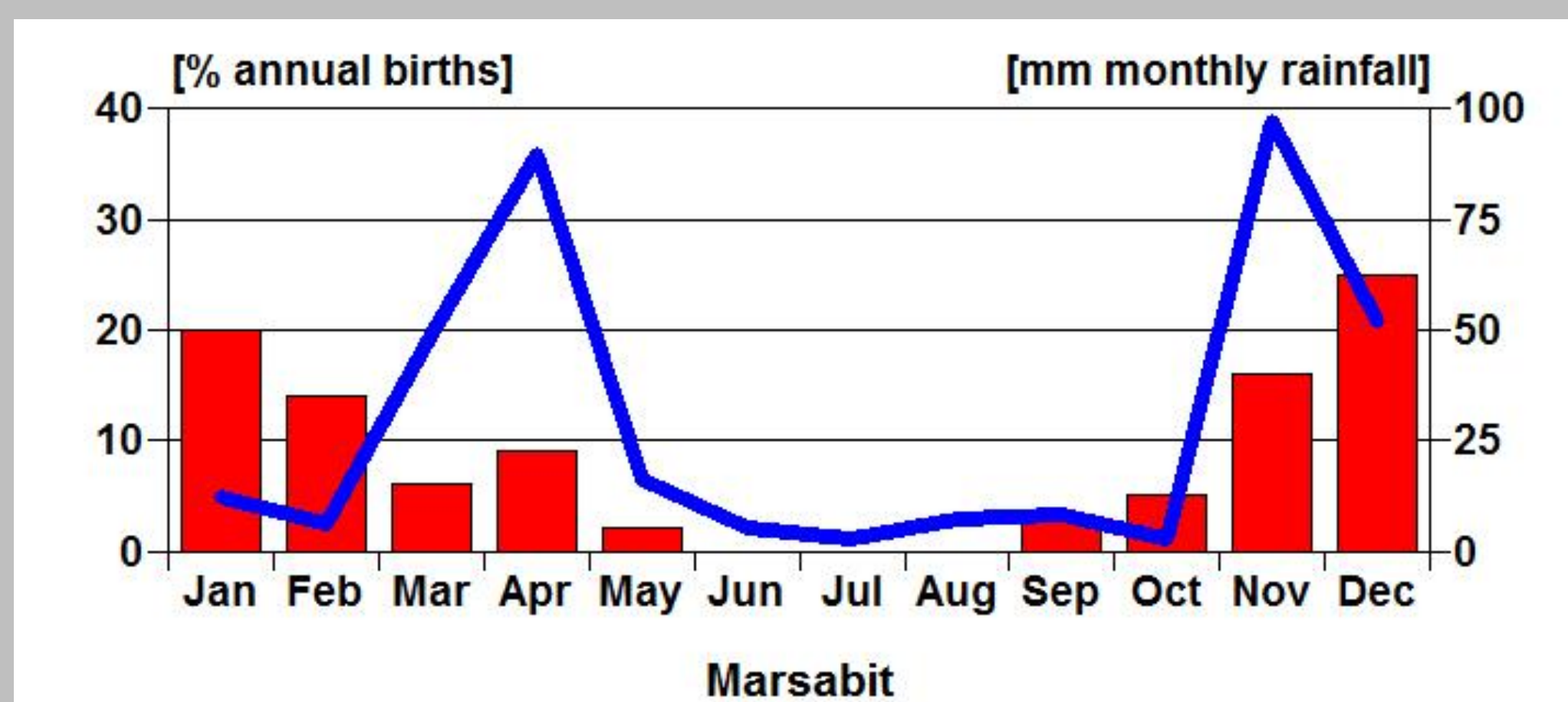
Recorded age structure of female camels in an existing pastoral herd and the observed number of births by age group



Biological / Physiological Constraints
Age at sexual maturity, conception rate, gestation length, foetal mortality, length of calving interval, lactation anoestrous, breeding seasonality

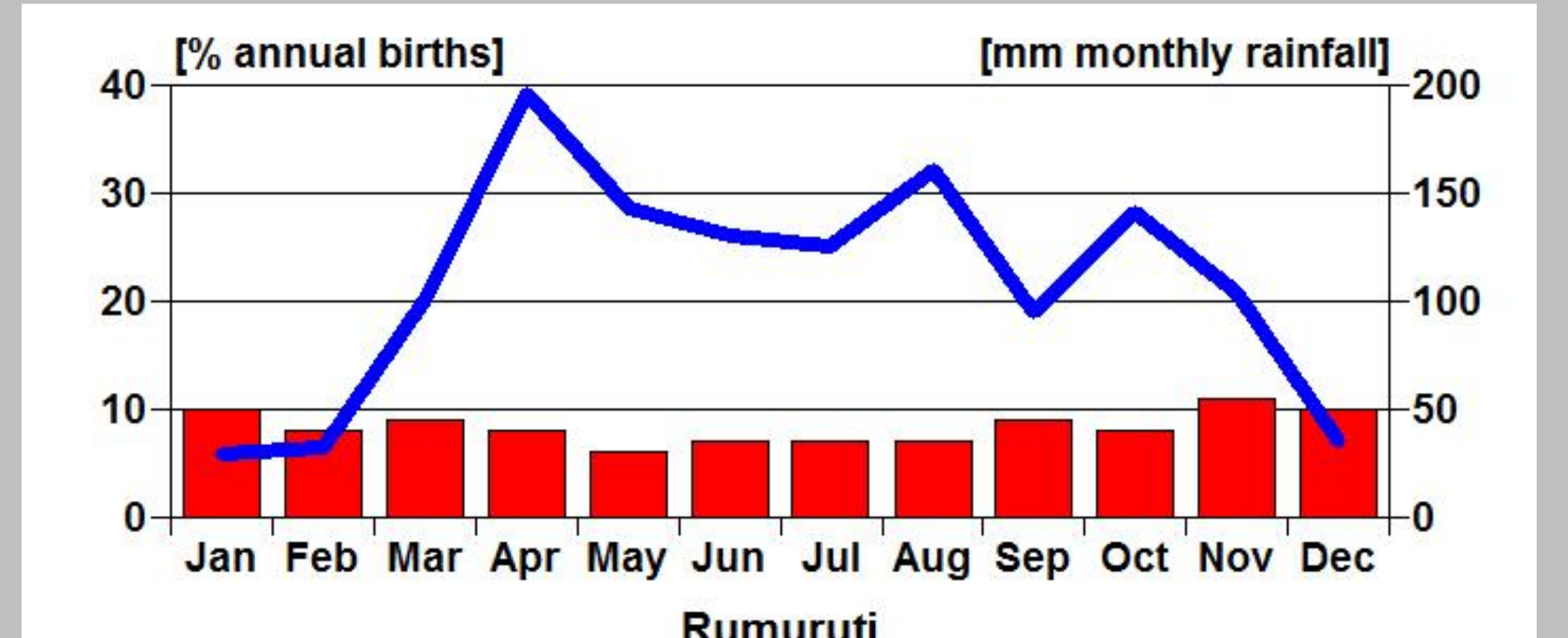
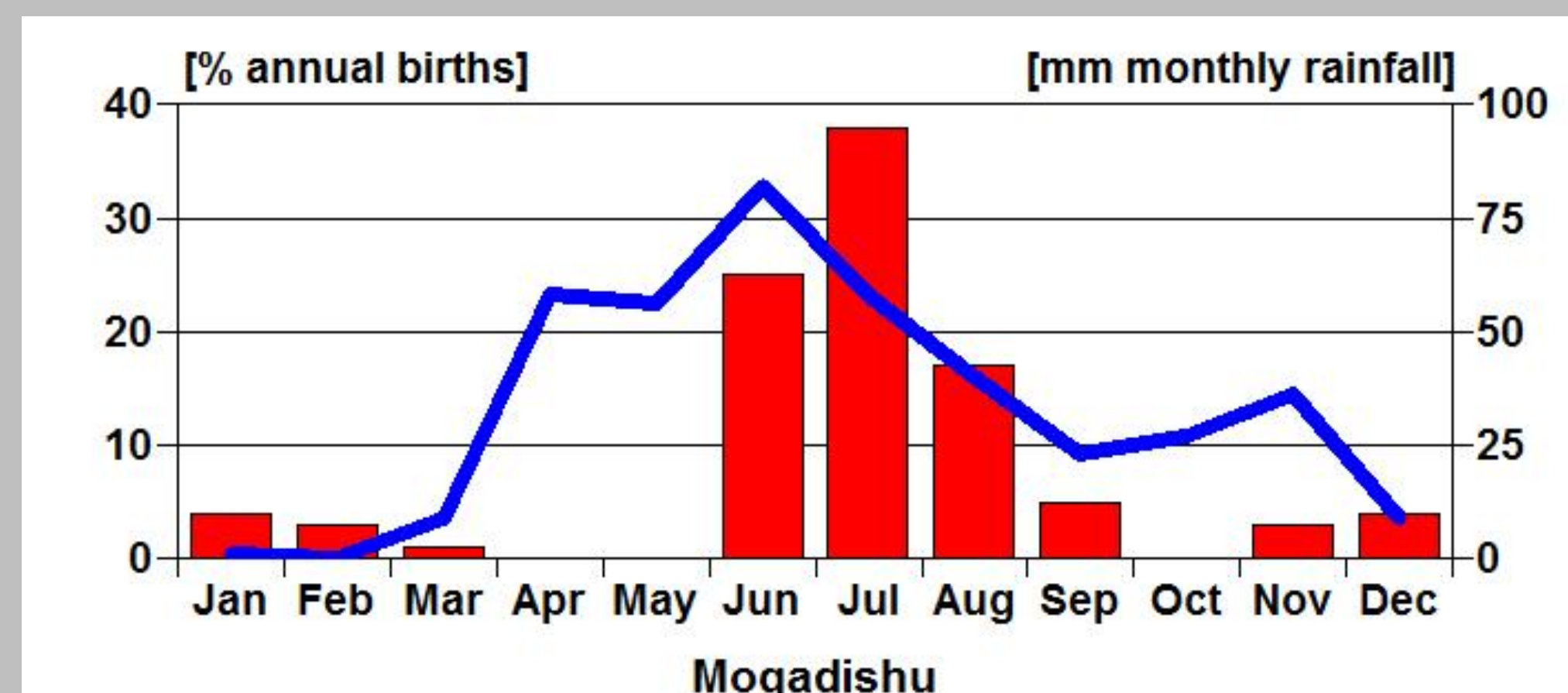
Constraints on herd growth

Environmental Constraints
Production Systems Constraints
Management and Health Constraints



Calving season solely determined by rainfall, i.e. forage supply; no possible photoperiodic effect. Resulting calving intervals [months]: Marsabit = 28, Mogadishu = 30, Rumuruti = 20

EXAMPLE Seasonality:
Three camel herds in equatorial East Africa

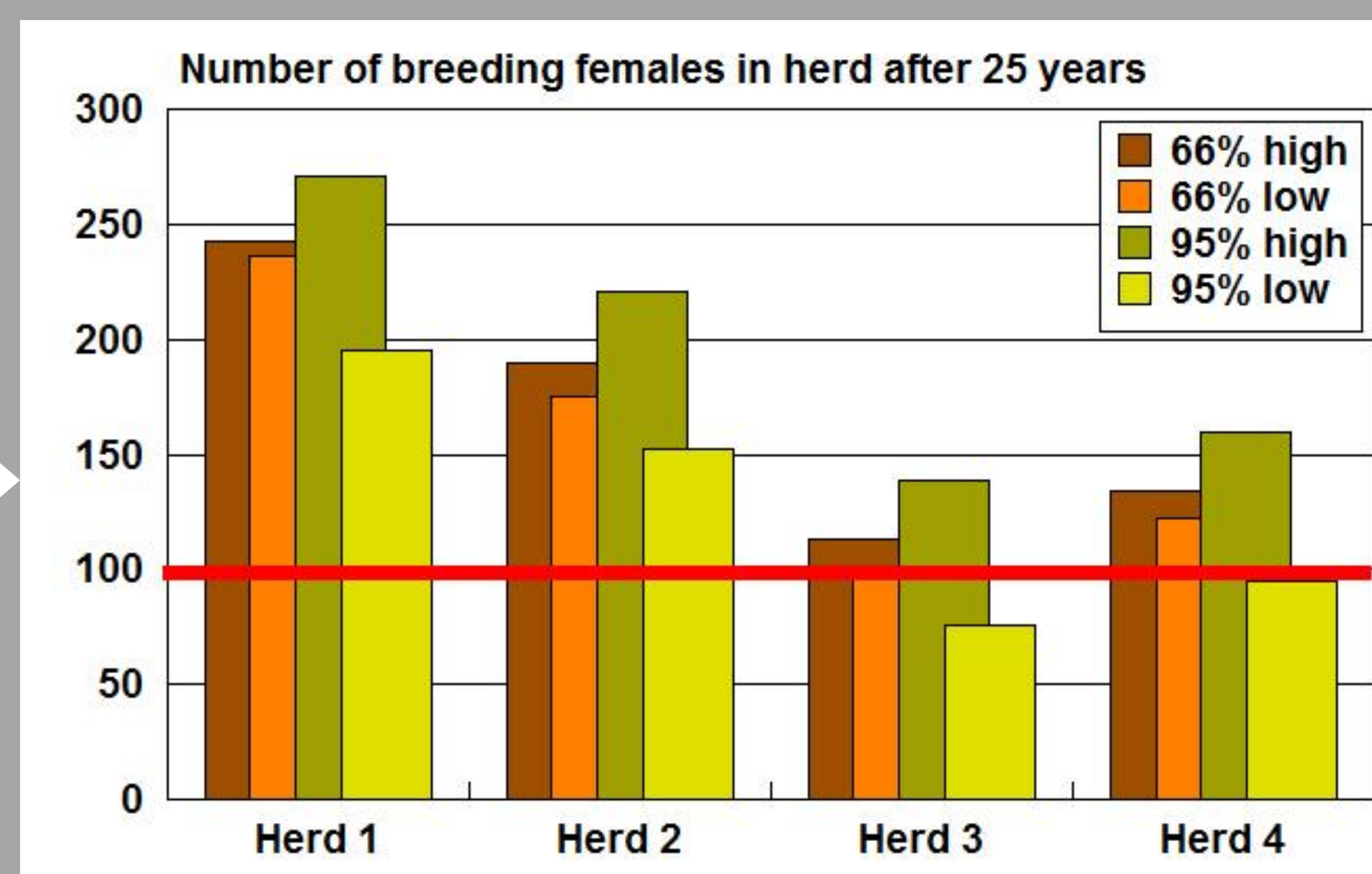


Intervention potential: Supplementary feeding of females, flush feeding of breeding males, early weaning of male calves and reduction of milking period of their dams.

EXAMPLE: Production System

Simulation of the upper (high) and lower (low) thresholds of camel herd size in 4 production systems after 25 years, based on an initial herd size of 100 breeding females aged 3 years, estimated at two levels of probability.

Herd 1 Research Station, no milk off-take
Herd 2 Ranch herd, limited milk off-take
Herd 3 Nomad herd, max. milk off-take
Herd 4 Nomad herd, limited milk off-take



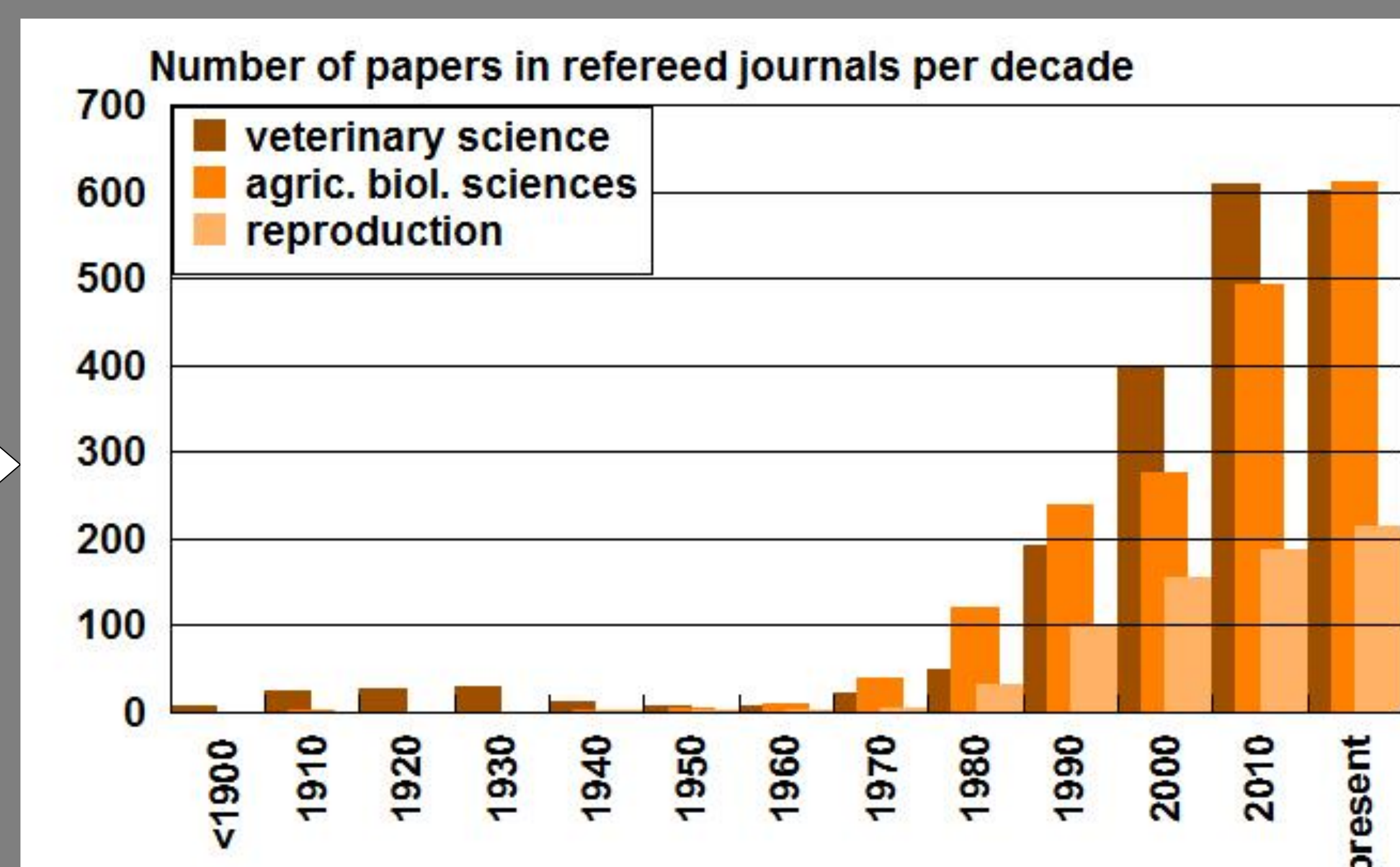
Antagonistic Production Targets

High milk production/off-take and high herd growth are antagonistic production objectives. However, our understanding of physiological, nutritional, health, and environmental factors in this antagonism is still poor; particularly so under field conditions in pastoral systems.

Current Research Emphasis

A survey of papers on camels done on www.sciencedirect.com revealed a steep and parallel increase in the past three decades in the relevant disciplines.

A strong emphasis in reproduction related research is on all aspects of assisted reproduction in intensive camel milk production, applicable to not more than two percent of the world's camel population.



Perceived Research Needs

- Can age at first calving be reduced in pastoral production systems?
- Can parturition intervals be shortened in pastoral production systems?
- Can breeding seasons be extended by feeding programmes for male and/or female camels?
- More information needs to be collected on herd structure in various ecological, economic, and geographic contexts.