1. **Inclusion Criteria**

* Focus on studies reporting results of experiments on **ruminants in Africa**
* Studies that report **dry matter intake** (DMI) plus ...
* At least one of the following animal characteristics
  + Bodyweight
  + Daily gain
  + Milk yield
  + Lactation stage
  + Gestation status (yes or no)
  + Pregnancy status (yes or no)
* At least one of the following dietary characteristics (either in g dry matter, fresh weight, or % basis)
  + Neutral detergent fibre
  + Acid detergent fibre
  + Crude protein
  + Metabolisable energy
  + Dry matter digestibility
  + Net energy
  + Gross energy
  + Total fibre
  + Dietary composition (intake of individual feed ingredients)
* Report control/treatment averages as well as measures of variability (standard deviation, standard error, coefficient of variation)
  + In each case report measure and unit that were reported
  + Afterwards we can group measures and convert to standardized system (e.g. coefficient of variation)
* Use **primary data**
* Extend to any African livestock systems: intensive, smallholder, pastoral, agropastoral, including those in complete confinement
* Include any combination of control, treatments (include even if no treatments are conducted)

1. **Exclusion criteria**

* Studies based on
  + Survey or farmer recall data alone

1. **Extraction protocol**

* Use the same template (excel sheet) as existing ERA database (see attached)
  + Dietary data (DMI plus other dietary/feed data)
  + Animal characteristics
    - As listed in (1) above plus
    - Breed
    - Any veterinary or other husbandry practices mentioned
  + Additional variables (not in original dataset)
    - Co-variates to be considered
      * GPS coordinates (if listed) (in decimal degree format, e.g. 1.5° S, 37.5° E)
      * Altitude (m above sea level)
      * System description (confined, semi-intensive, pastoral)
      * Season (dry, rainy)
      * Gender of animals (i.e. all male, all female, mixed)
      * Activity levels
  + Measurement techniques
    - For variable reported, identify how data was collected
    - Summary of common methods can be added manually in excel template
      * DMI: mass balance
* If data is not reported directly in text or table, it can be inferred based on whichever methods possible (*e.g*. if feed intake reported on kg-1 BW basis, can be converted to dry matter basis if bodyweight also reported)