

# Indigenous climatic indicators for early warning in semi-arid smallholder farming of Zimbabwe

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## 1. Introduction

- Semi-arid Zimbabwe - unimodal rainfall coupled with seasonal variability, recurrent droughts, dry spells, floods
- Harder for smallholder farmers' decision making and planning
- Meteorological forecasts vs farmer needs in the face of climate change
- Role of indigenous knowledge – local indicators - in agricultural early warning systems (AEWS)?
  - Evidence needed for sound integration of these indicators.

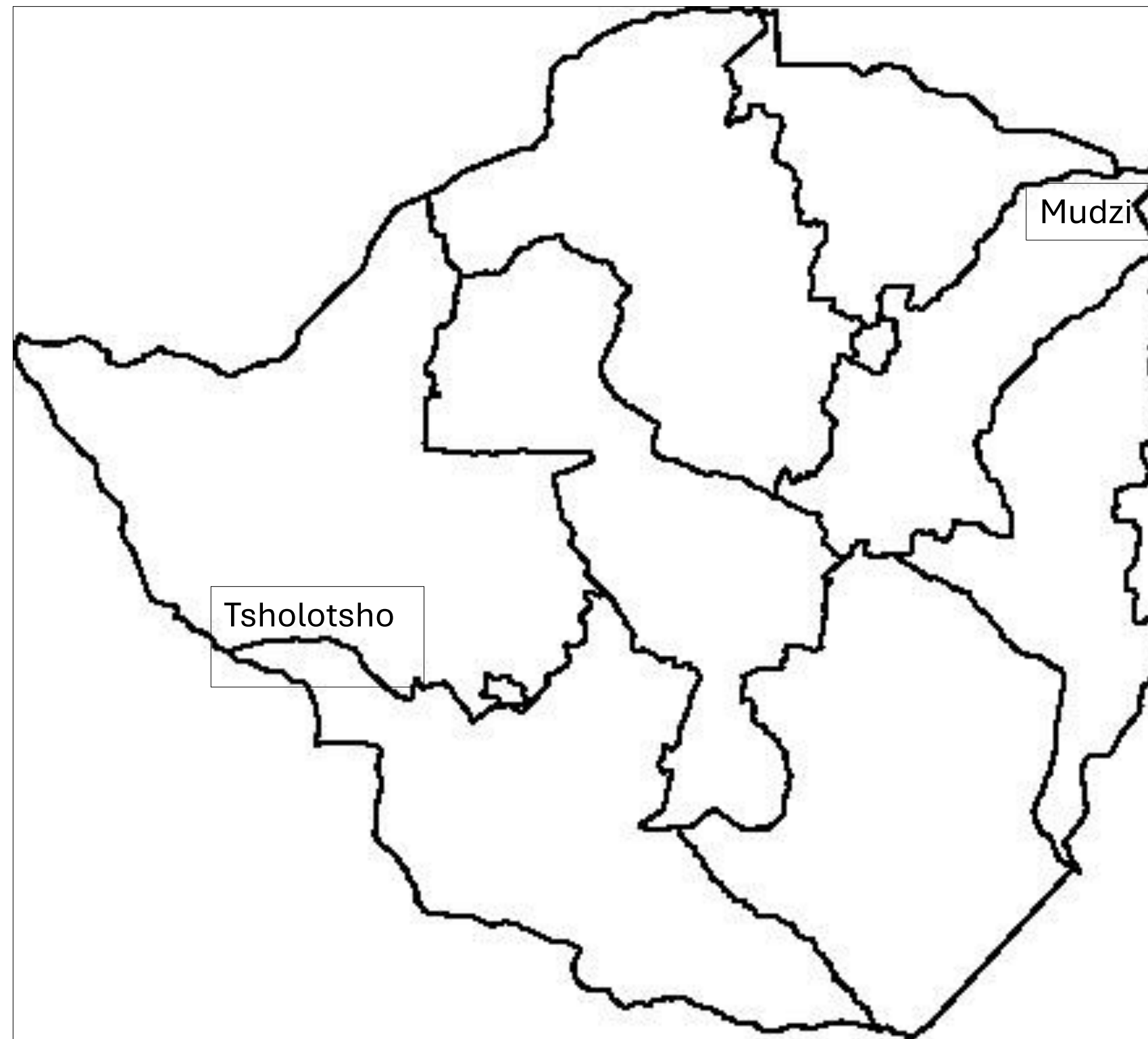


Fig. 1: Map of Zimbabwe showing locations for Mudzi and Tsholotsho districts. Source of map outline: Vemaps.com

## 2. Materials and Methods

- Discussions - 10 MASAP Project Farmer Groups - Mudzi and Tsholotsho districts, Zimbabwe.
- Documenting known local/indigenous phenomena perceived to have climatic indications, and if observed in 2023/24?
- Categorisation of phenomena:
  - animal behavior
  - vegetation/plant characteristics
  - terrestrial / celestial
  - weather related
- Further grouping:
  - +ve = projecting good season
  - -ve = projecting poor season

## 3. Preliminary findings

- > 60 indicators with perceived +ve / -ve season performance outcomes.
- Most indicators mentioned (56 - 78 %) were +ve pointers (Fig. 2).
- Mentioned +ve and -ve indicators observed in 2023/24:
  - Animal/insect: only 42 % +ve. No -ve
  - Vegetation/plant: 22% +ve; 86 % -ve
  - Terrestrial/Celestial: 43% +ve; No -ve
  - Weather related: 33% +ve; 56 % -ve.
- Observed strongly in 2023/24:
  - Only -ve indicators - conforming to poor 2023/24 season.

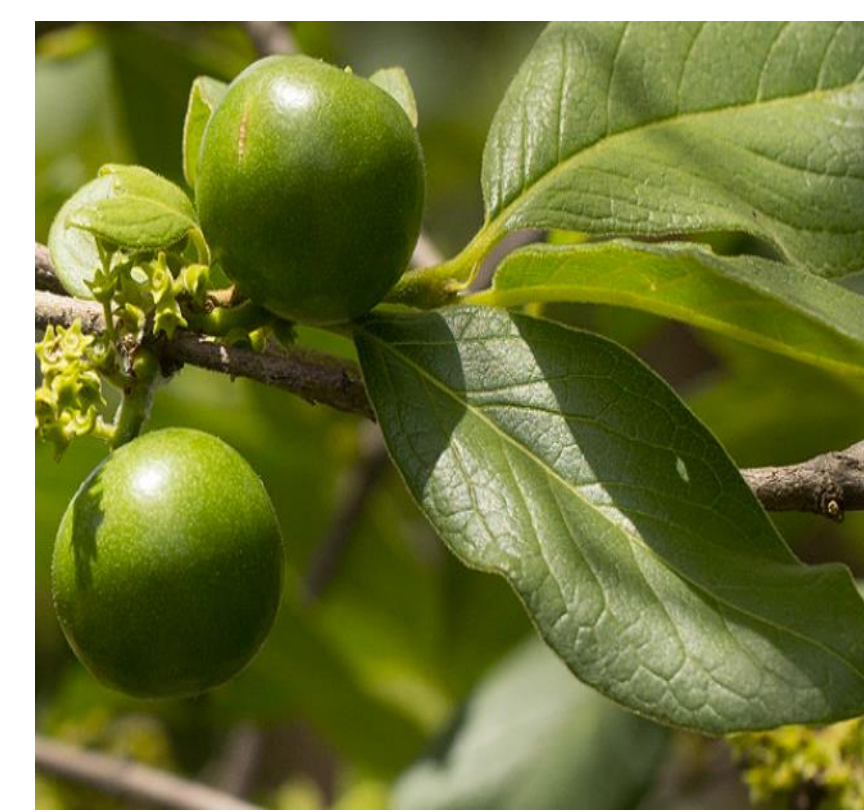


Fig. 2: Examples of indigenous plants perceived to possess some climate forecasting behaviour. Left: *Vangueria infausta* (Shona name: Munzviru, Ndebele name: Umviyo); Right: *Strychnos madagascariensis* (Shona name Mukwaka, Ndebele name: Umkwakwa).

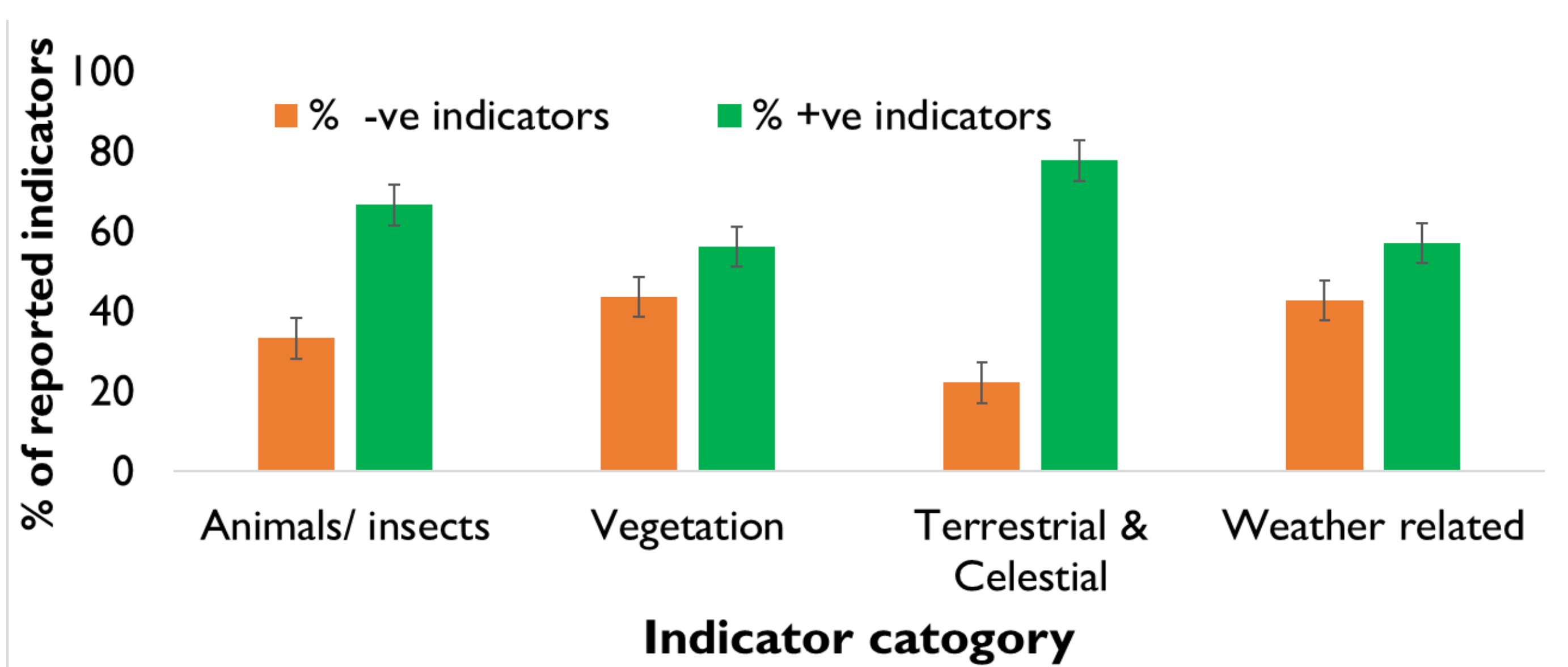


Fig. 3: Distribution of the categorised mentioned indigenous indicators based on type and perceived season performance outcome

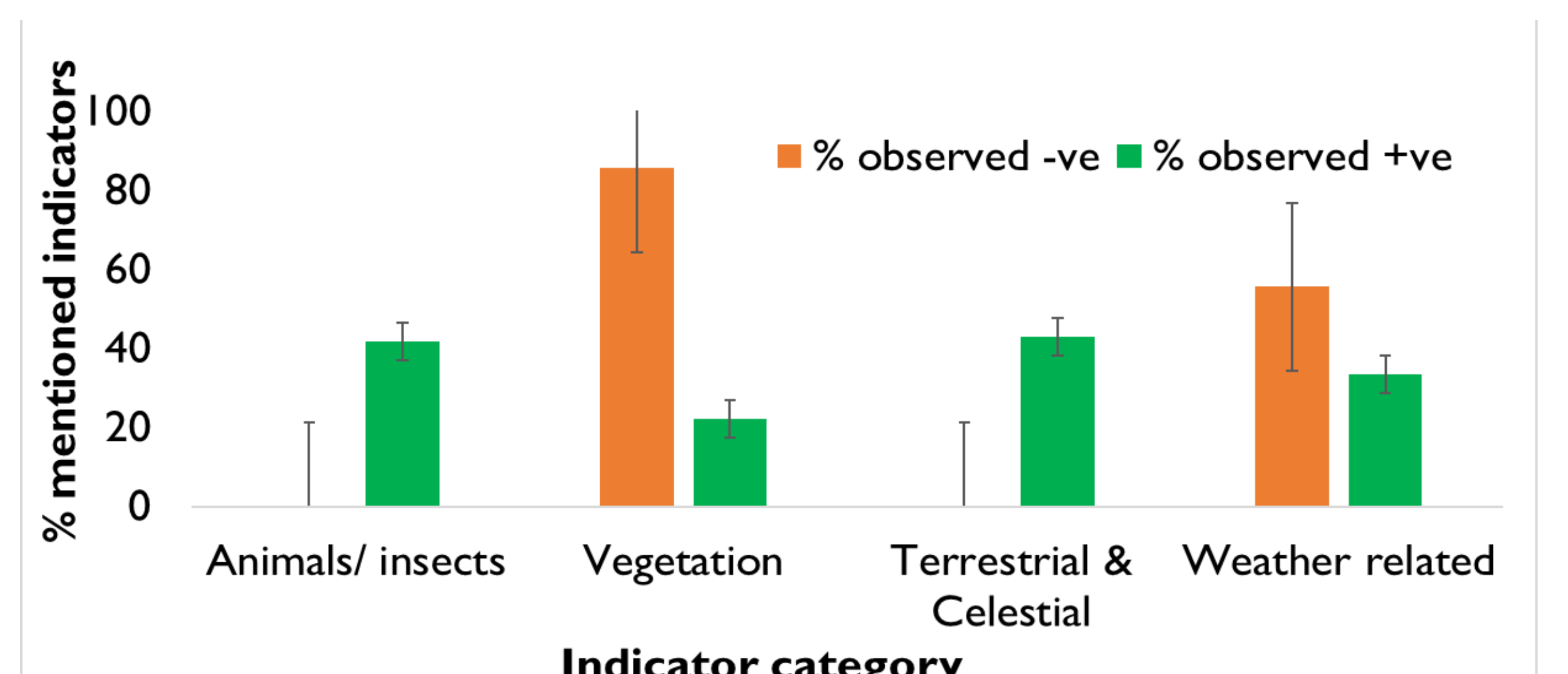


Fig. 4: Proportion of reported +ve and -ve indicators observed during 2023/24 season

## 4. Discussion and Conclusions

- Type of indicator and perceived intensity of the indicator expression seems critical.
- Great potential for indigenous knowledge in AEWS, but,
- Long-term repeated empirical data, relational analysis - rainfall characteristics/patterns, crop performance vs. observations on selected key indigenous indicators - needed for strengthened evidence.

## 5. Acknowledgements

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