Alfalfa to get back into planetary boundaries

2025 world alfalfa congress
FRANCE REIMS-CHÂLONS

Sequence 1: Agronomy

Claude TABEL

Young professionnals session

FROM 03 TO 06 nov. 2025

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Evaluating the agronomic performance of diverse alfalfa (*Medicago sativa*) in Zambia

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INTRODUCTION

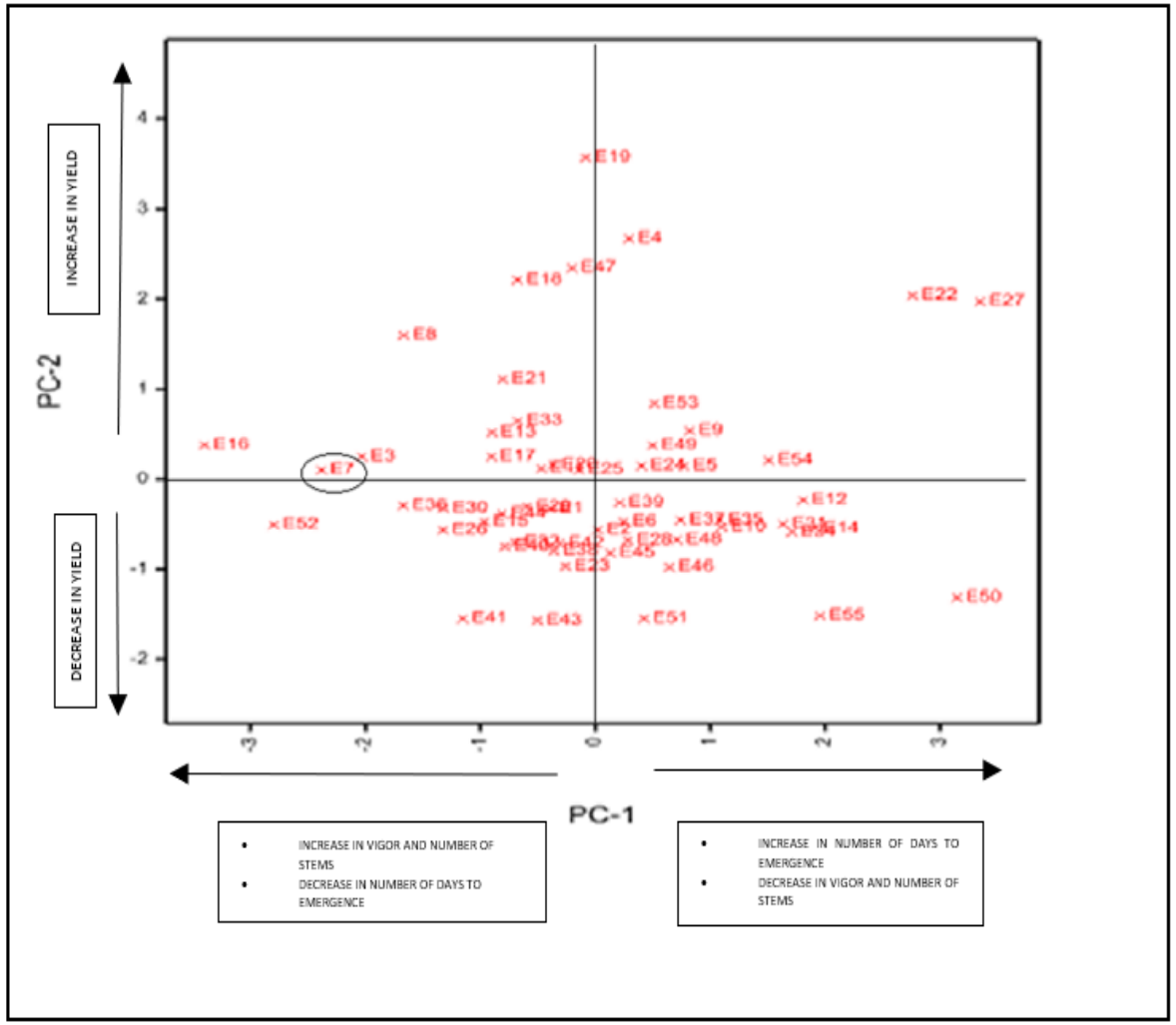
- Zambia has a highly variable monsoonal climate, and has recently experienced a series of climatic extremes e.g. droughts.

Low livestock productivity, & increased livestock mortality due to lack of quality forages.*

- **Aim:** To assess the agronomic performance of the introduced alfalfa populations for forage production in Zambia.

- **Experimental layout**: A randomized complete block design (RCBD) with 55 alfalfa populations, replicated 3 times, & evaluated under 3 harvest periods.

PCA SCATTER PLOT EXHIBITING GENOTYPIC PERFORMANCE OF ALFALFA POPULATIONS ACROSS THREE HARVEST PERIODS



- PCA revealed that **days to emergence** had an inverse relationship with mean vigor and number of stems per plant
- Yield associated with PC-2 (LV= 0.88)
- PC1 and PC2 contributed 46.52% and 30.04% of the PVE respectively .

Genotypic Means Across Harvest Periods

GENOTYPE	CODE	YIELD (Kg/ha)
CTA046	E19	7479.9
CTA051+CTA	E47	6666.71
TITAN 9	E18	5507.81
CTA018	E33	5411.16
CTA 043	E49	4877.5
TA 37	E41	4793.1
CTA033	E24	4539.07
SARDI10SERIES	E26	4273.22
CTA009	E4	4190.36
SARDI7SERIES	E20	4171.49

Table 1

- Significant differences ($p<0.001$) were obtained among populations across harvesting periods.
- CTA046 was the highest performing population with a mean yield of 7479.9 Kg/ha (Table 1)
- This study revealed that most of the introduced alfalfa populations exhibited desirable agronomic traits (high plant, vigor & biomass yield), with mean performance above the local check.