

ALLELOPATHIC EFFECTS OF *EURYOPS* *FLORIBUNDUS* ON GERMINATION DEVELOPMENT OF DIFFERENT PLANT SEEDS


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INTRODUCTION

- *E. floribundus* is one of the woody species encroaching at different densities in communal rangelands of E. C.
- In rangelands, plants compete for resources such as soil moisture, nutrients and access to the photo-energy.
- Some plants have the ability of releasing chemicals which may inhibit growth of others,
 - this phenomenon is known as allelopathy.
- *E. floribundus* is suspected to exhibit allelopathic properties and therefore assumed to have negative effect on forage production.

INTRODUCTION.....

- It is important to develop the effective control measures to the encroachment of rangelands by *E. floribundus*,
- Therefore, adequate understanding of the cause and effect of change in
 - species composition,
 - basal cover and
 - forage production

underneath and around it is imperative.
- The objective
 - to investigate the allelopathic effects of plant extracts from different parts of *E. floribundus* on germination of different pasture plant seeds.

MATERIALS AND METHODS

- *E. floribundus* plant material was collected from a natural population of its mature bush at Cala.
- Germination study was conducted at FCC (32° 46'S, 27° 02'E) located in Bisho Thornveld.
- The plant material was separated into roots (Ph and -Xy), stems (St) and leaves (Lv).
- Plant materials were oven dried at 60°C for 72 hours and pulverized in a hammer mill fitted with 1mm sieve.
- 20 g of each plant material was added to 1L distilled water and
 - agitated for 48 hr with STUART Orbital shaker SSL1 before filtration through Whatman 4 L filter paper.

MATERIAL AND METHODS...

- Plant materials were reconstituted in distilled water to give the desired concentration of 10, 20 and 30 ml/L.
- 20 seeds of each plant species (*L. perrene*, *T. repens*, *E. curvula* and *B. oleracea* as control) were placed in different covered PD's lined with filter paper.
- The PD's were wetted with 2 ml of each PP extracts in different conc... (10, 20 and 30 ml/L) and dist... water.
- Thereafter, the PD's were incubated at 27 C.
- All treatments (PS, *E. f* parts and Conc...) were replicated twice.
- germination % was taken after 4 days, where seed with 5 mm radicle were considered as germinated.



STATISTICAL

- Data were analysed with ANOVA with GLM procedure of SPSS 2011
- Means were separated with LSD
- Pearson correlation was ran to determine relationship between variables
- The results were considered significant at $p < 0.05$

RESULTS AND DISCUSSION

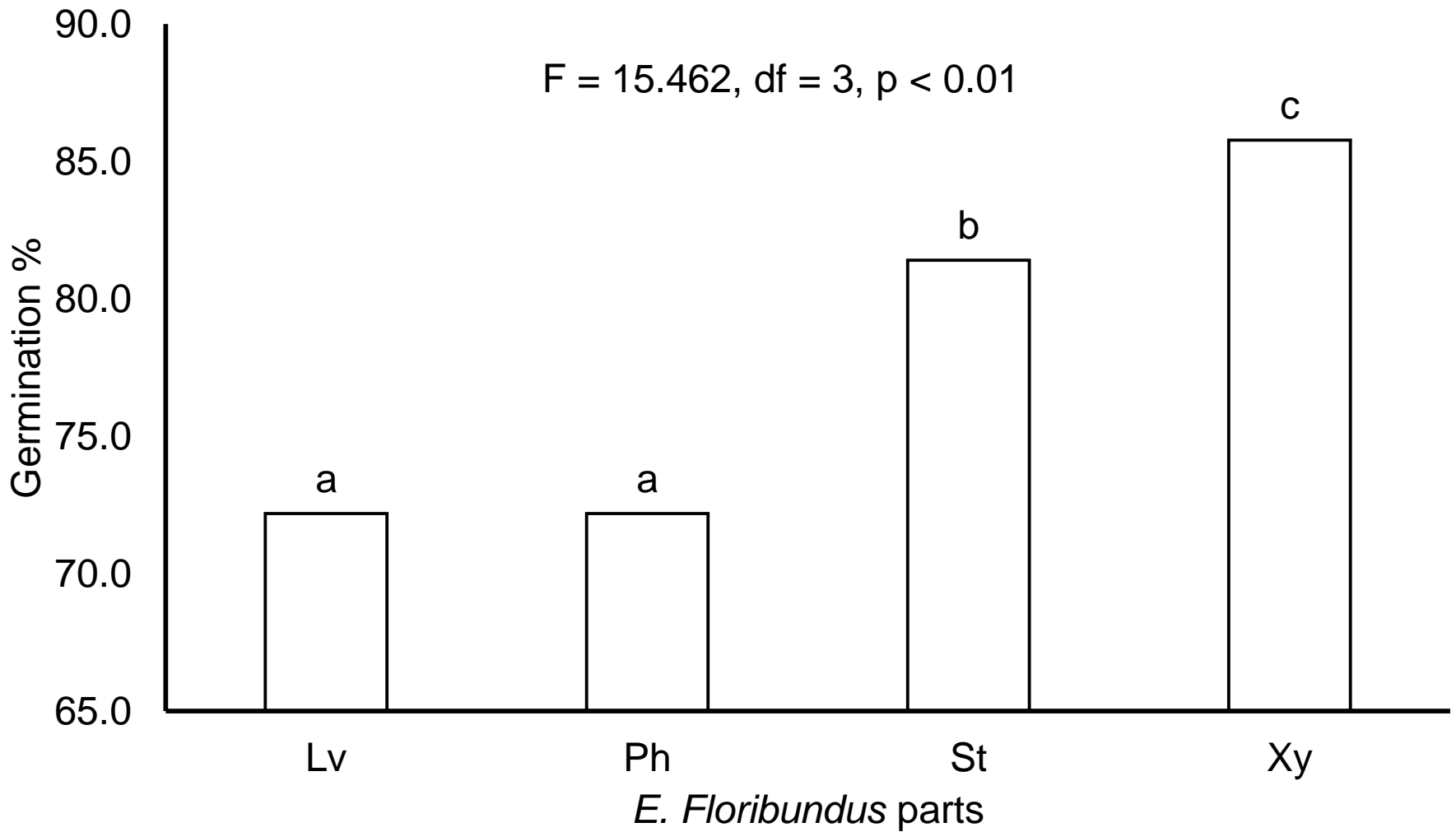


Figure 1: Germination percentage of seeds treated with plant extracts from leaves, phloem, stem and xylem parts of *E. Floribundus*

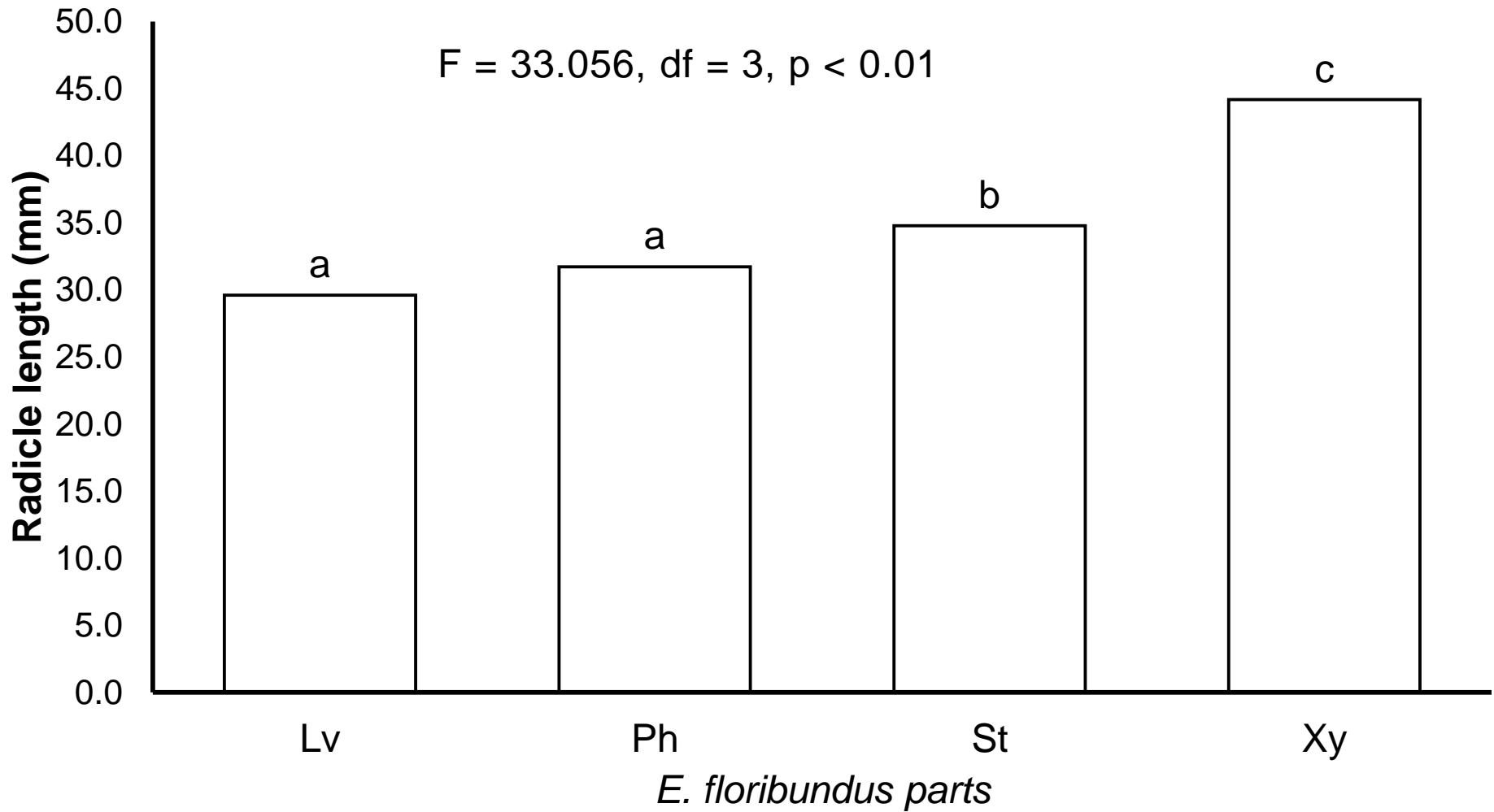


Figure 2: Radicle length of seeds treated with plant extracts from leaves, phloem, stem and xylem parts of *E. Floribundus*

F = 24.560, df = 3, p < 0.01

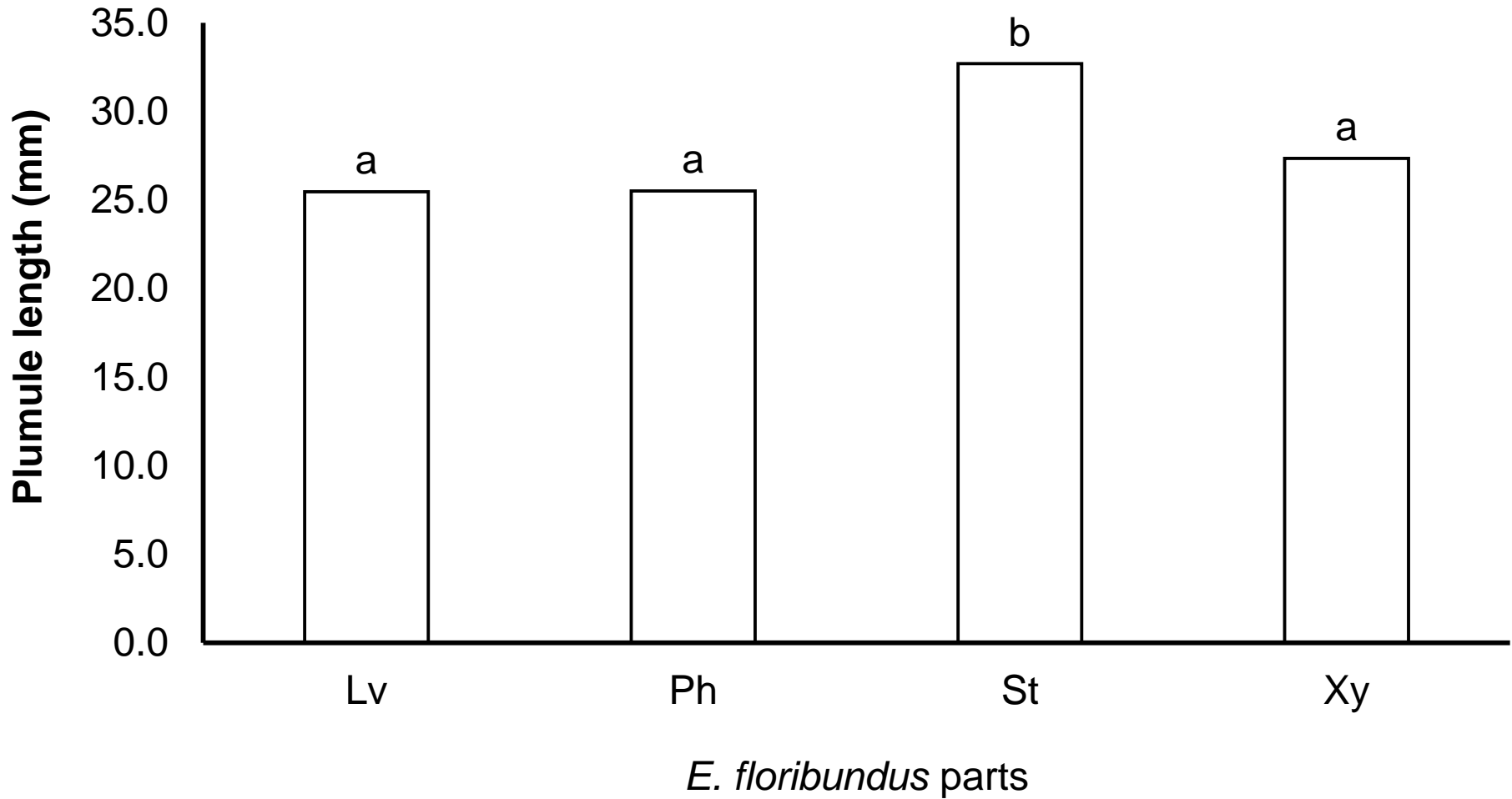


Figure 3: Plumule length of seeds treated with plant extracts from leaves, phloem, stem and xylem parts of *E. Floribundus*

$F = 65.214, df = 3, p < 0.01$

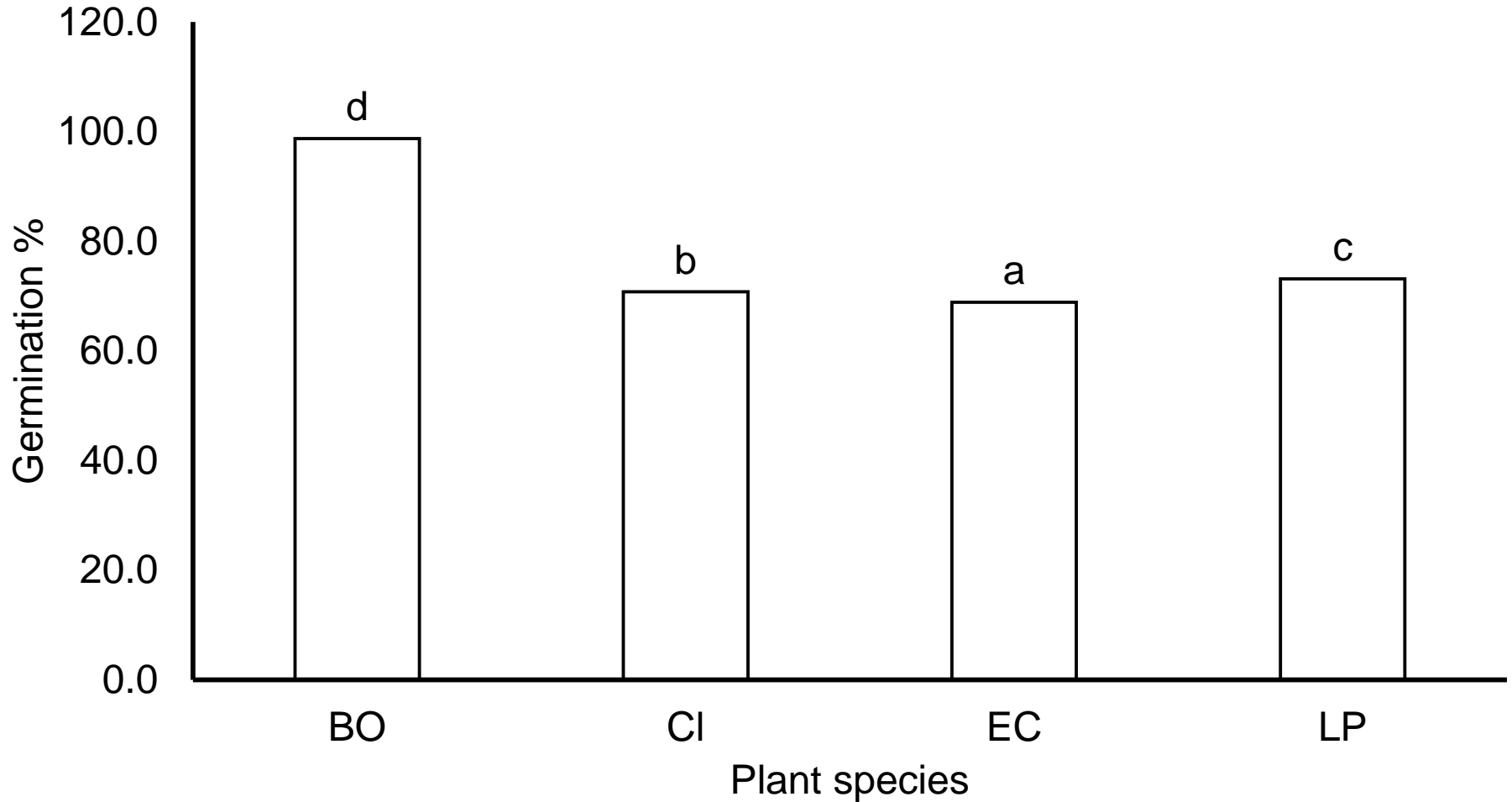


Figure 4: Germination percentage of seeds of different plants treated with plant extracts of *E. Floribundus*

F = 565.834, df = 3, p < 0.01

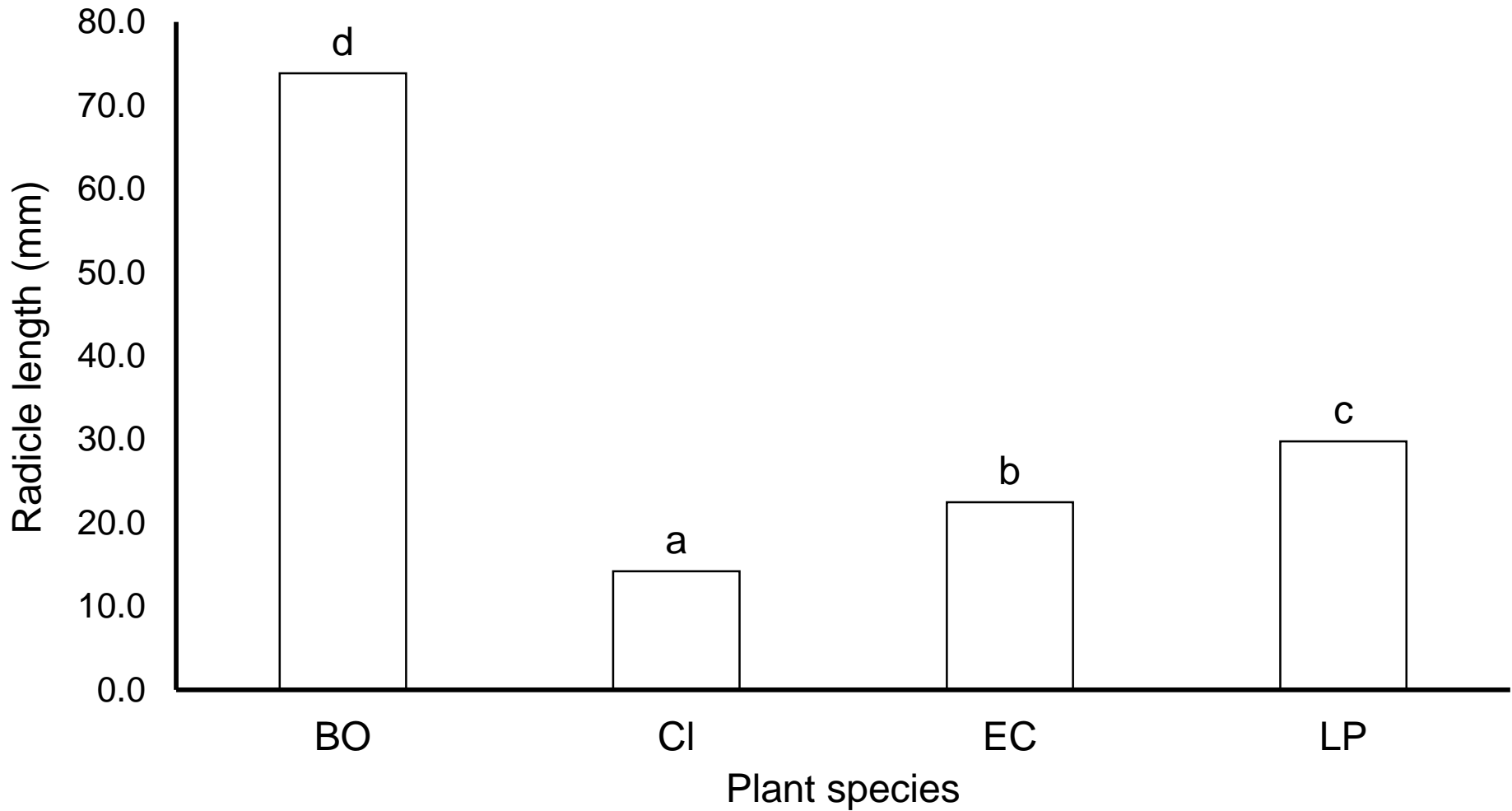


Figure 5: Radicle length of seeds of different plants treated with plant extracts of *E. Floribundus*

F = 362.621, df = 3, p < 0.01

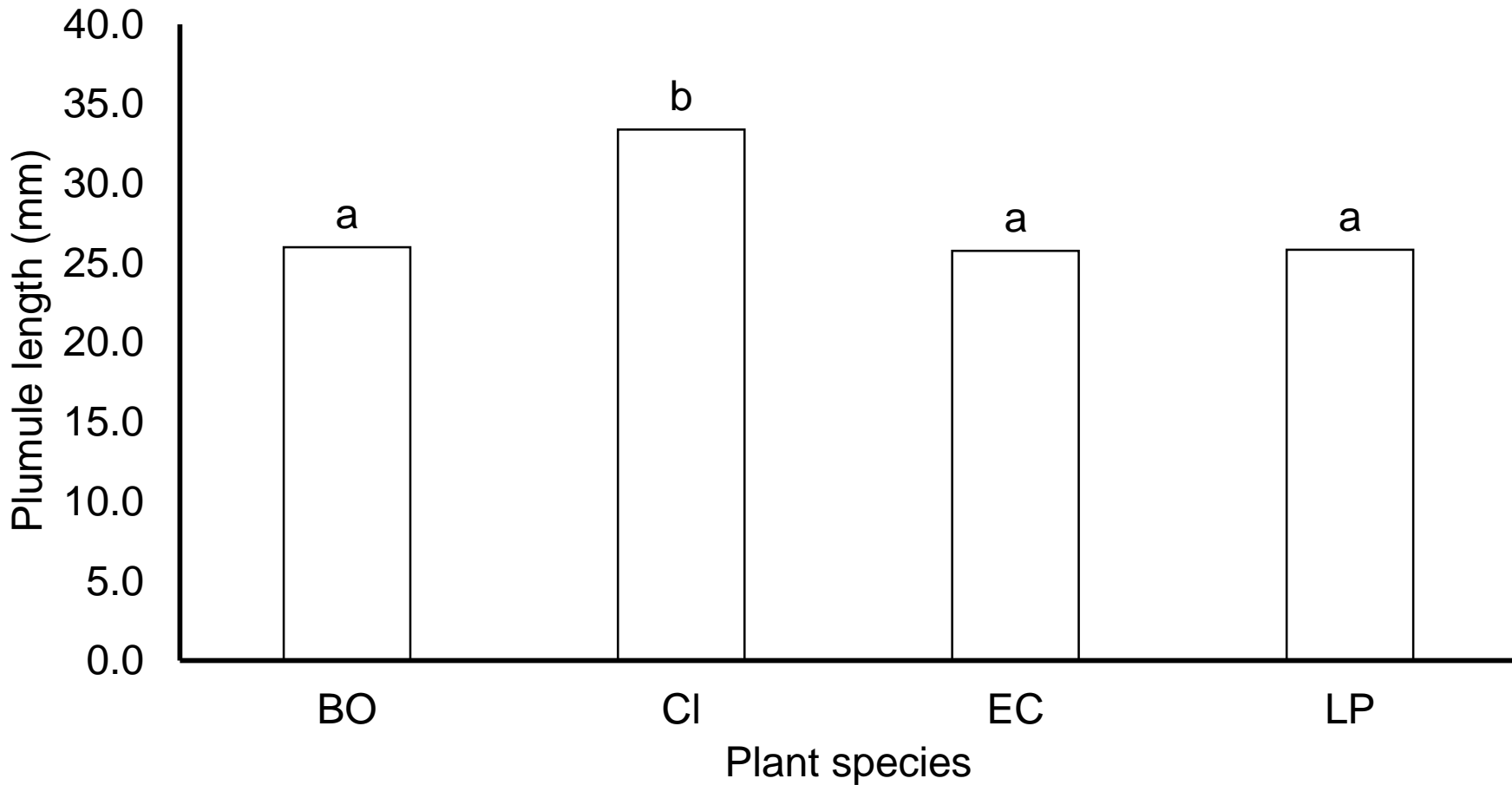


Figure 6: Plumule length of seeds of different plants treated with plant extracts of *E. Floribundus*

$F = 5.269, df = 3, p = 0.05$

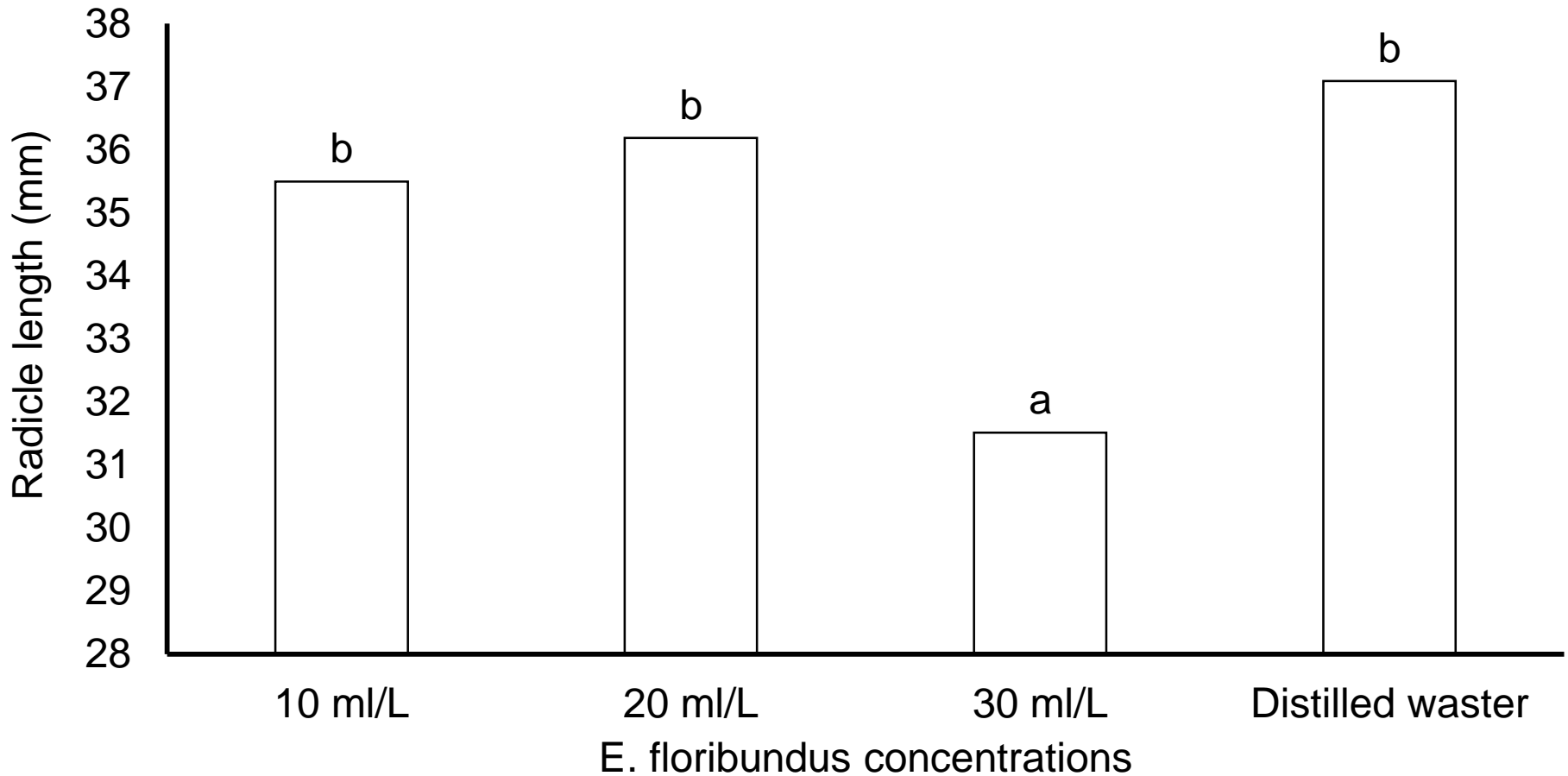


Figure 5: Radicle length of seeds treated with different concentrations of plant extracts of *E. Floribundus*

CONCLUSION AND RECOMMENDATIONS

- *E. floribundus* extracts have effect on germination percentage, radicle and plumule growth of different forage plant species.
- The concentration varies with plant parts, thus leaves and phloem have more effect.
- The germination suppression effect is larger at the higher concentrations.
- Therefore *E. floribundus* have effect on forage production in rangelands
- The encroachment of *E. floribundus* in rangelands should be given attention

THANK YOU

