Environmental factors regulating *Cenchrus spinifex* seed germination

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Fernando H. Oreja*, Patricia A. Del Fueyo, Elba B. de la Fuente

University of Buenos Aires, Faculty of Agronomy, Department of Vegetal Production, Industrial Crops

***Corresponding author: orejaf@agro.uba.ar**

INTRODUCTION *Cenchrus spinifex* is a common annual weed throughout tropical and subtropical habitats and very problematic in summer crops of the semi-arid pampas and sandy soils from Argentina. Understanding the emergence behaviour of this species in relation to the environment is crucial for an effective weed management, which depends on precise timing of practices related to weed emergence.

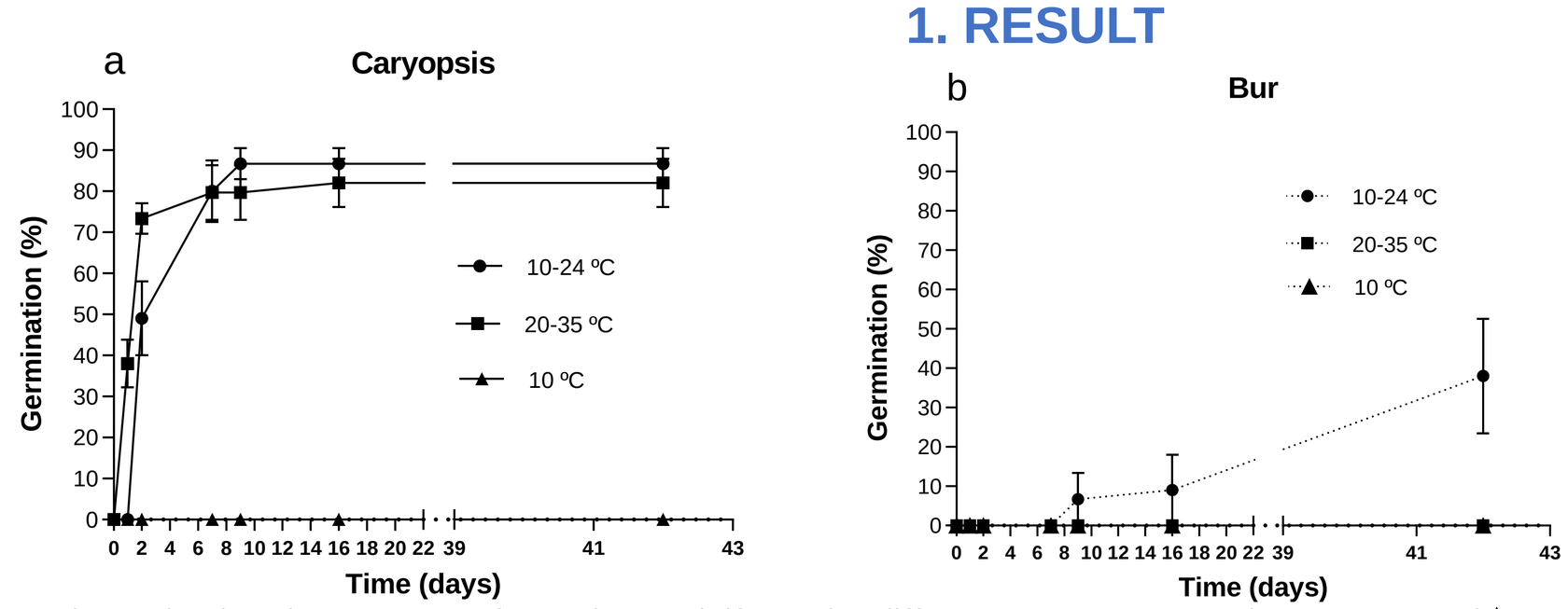
OBJECTIVE: The objective was to determine the conditions (temperature, water potential, soil type and soil water content) as well as seed status (burs, caryopses, recently dispersed and stored for one year) that favour dormancy release and germination of *C. spinifex*

MATERIALS AND METHODS

In three factorials CRD chamber experiments, factors were i) environmental conditions: temperature, water potential, soil type and soil water content and ii) seed status (burs or caryopses and recently dispersed or stored for one year).

C. spinifex invading a wheat crop recently havesrted field in Argentina

1. RESULT

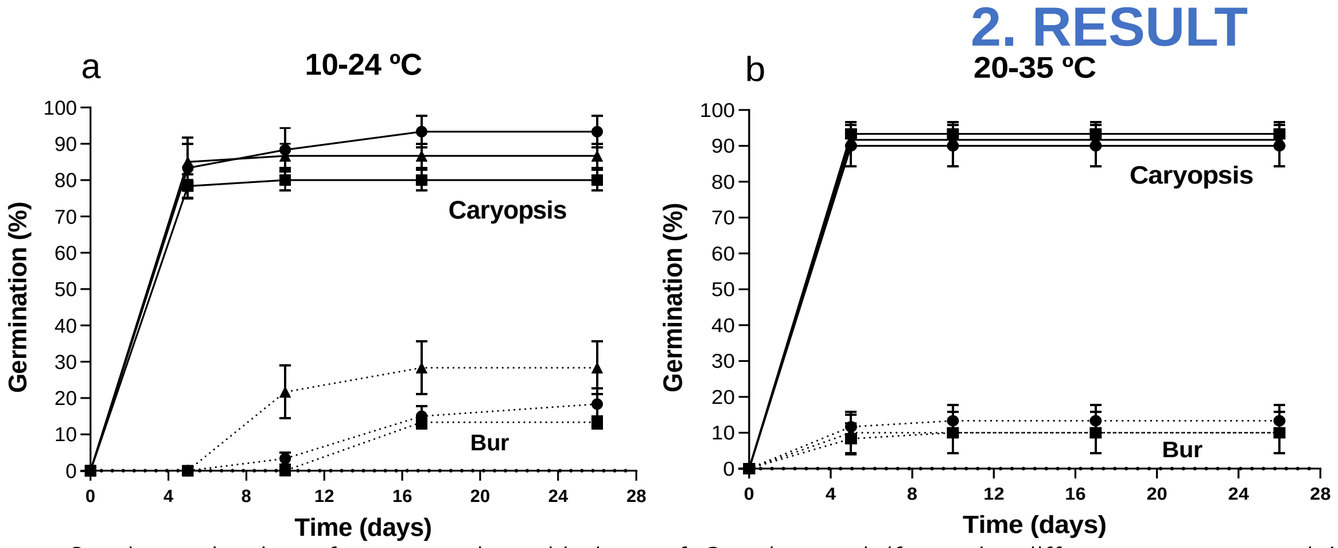


Seed germination time courses of *Cenchrus spinifex* under different temperature regimes: constant (▲ 10ºC) and alternating (● 10/24ºC and ■ 20/35ºC) for a: Caryopsis (seeds without seed covers) and b: Bur (seeds with seed covers). Values are the means and vertical bars are SE.

1. CONCLUSION

Burs (38%) and caryopsis (80%) from recently dispersed seeds germinated at alternating temperatures of 10/24ºC.

2. RESULT

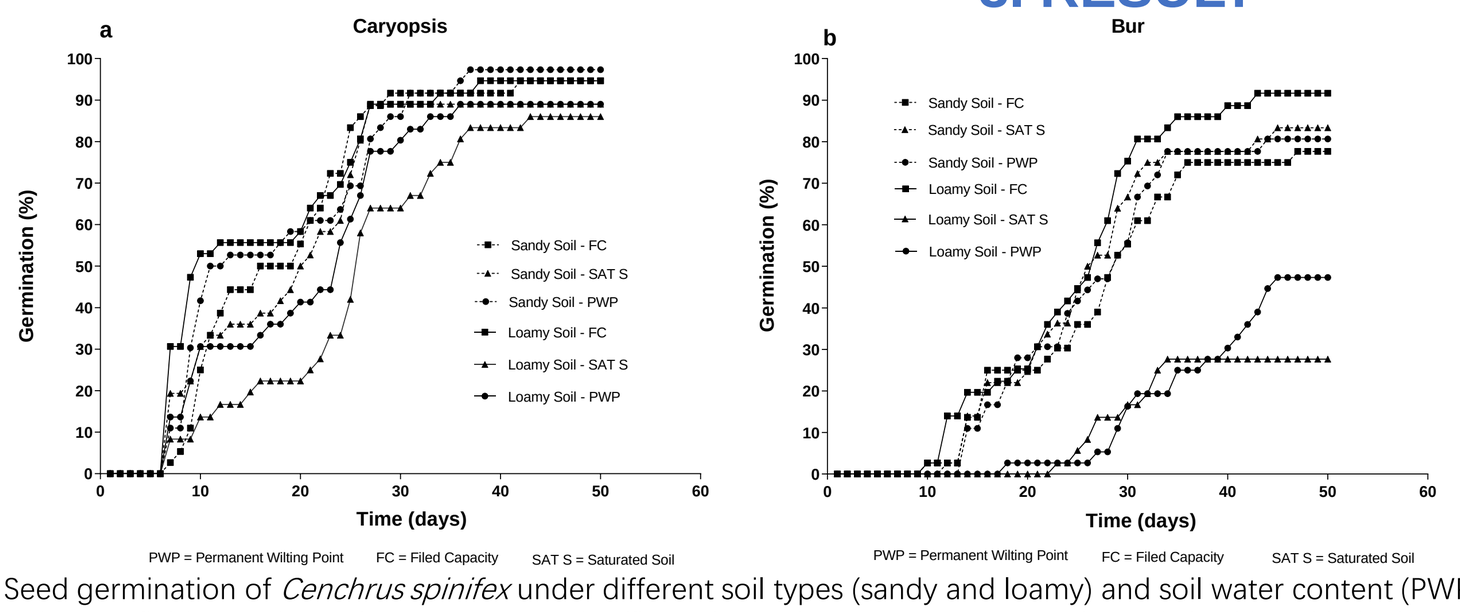


Seed germination of a: caryopsis and b: burs of *Cenchrus spinifex* under different water potentials (● 0MPa, ▲ -0.2MPa and ■-0.6MPa), and alternating temperatures of a: 10/24ºC and b: 20/35ºC. Values are the means and vertical bars are SE.

2. CONCLUSION

Germination was favoured by water potentials of -0.2 MPa and -0.6 MPa, at alternating temperatures of 10/ 24ºC, mainly for caryopsis.

3. RESULT



Seed germination of *Cenchrus spinifex* under different soil types (sandy and loamy) and soil water content (PWP: permanent wilting point; FC: field capacity and SAT S: saturated soil), at alternating temperatures 10°/24°C (8/16 h) and light for a: Caryopsis (seeds without seed covers) and b: Bur (seeds with seed covers).

3. CONCLUSION

Alternating temperatures of 10/24°C are the best thermal conditions to support germination of burs, while loam and permanent wet soils are the worst field conditions for its germination, which is an important reason for its absence in these environments.