Germination response of buckwheat (Fagopyrum esculentum) grown in northern Patagonia at different temperatures.

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INTRODUCTION

Fagopyrum esculentum or buckwheat is an annual herbaceous plant of the polygonaceae family with origins in Central Asia. Its grains are used for human and animal consumption and are noted for their energy content, nutritional quality and for being gluten-free. Buckwheat is a recently introduced crop in the Lower Rio Negro Valley (VIRN) and could be considered as the southernmost area of buckwheat cultivation in the country. The phenological cycle of the crop under VIRN environmental conditions extends from January to April. During this period the average maximum temperatures (T°) vary between 29 and 21°C and the minimum temperatures between 14 and 7.8°C.

The objective of this work was to determine the germination response of locally produced buckwheat at different germination T°.

MATERIALS AND METHODS

Germinations were carried out in a germination chamber. The previously disinfected seeds (1% hypochlorite for 30') were placed in Petri dishes conditioned with cotton, paper and adequate humidity. The germination T° evaluated were: 5; 10; 15; 20; 25; 30; 35 and 40ºC. The number of seeds per box was 20 and there were five replicates per T°. Every 24 hours, for seven days, germinated seeds were counted. The parameters evaluated were: germination capacity (GC); germination energy (GE); mean germination time (MGT), germination speed index (GSI).

For each variable an analysis of variance was performed using Infostat with a Fisher's test to compare means at a significance level of 5%.

The optimum temperature was considered to be that at which the seeds reached the highest germination percentage in the shortest time.

RESULTADOS

T°	GC (%)	GE (%)	MGT (days)	GSI
5°	0,00 c	0,00 d	0,00 d	0,00 e
10°	0,00 c	0,00 d	0,00 d	0,00 e
15°	95,00 a	99,88 a	4,93 a	6,82 d
20°	96,00 a	99,88 a	2,18 b	14,04 b
25°	93,00 a	99,88 a	2,57 b	14,79 b
30°	93,00 a	100,00 a	1,22 c	17,60 a
35°	68,00 b	68,98 c	1,70 c	11,43 c
40°	0,00 c	0,00 d	0,00 d	0,00 d

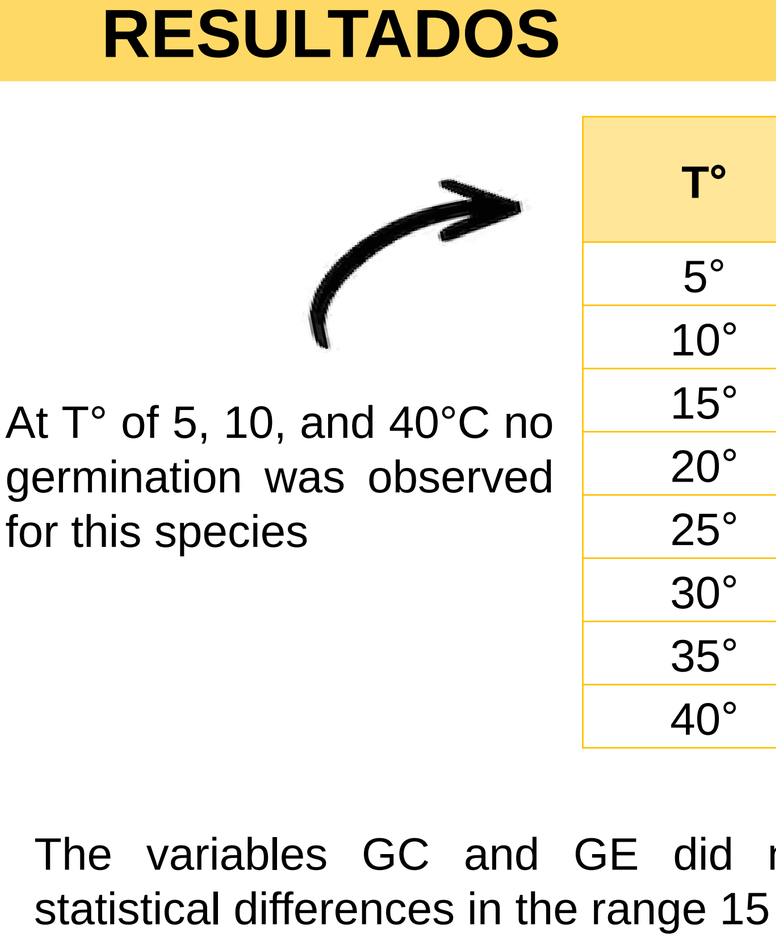
At T° of 5, 10, and 40°C no germination was observed for this species

The GSI increased to a maximum at 30°C.

At 30°C the highest GC, GE, GSI and the lowest MGT values were obtained.

The variables GC and GE did not show statistical differences in the range 15 - 30°C.

The MGT decreased with increasing T° and reached the lowest values at 30-35°C.



CONCLUSIONS

This experiment indicates 30°C as the optimum T°, since the highest values of GC, GE, GSI and the lowest MGT were obtained. The results confirm what is proposed by the ISTA standards (2009) where buckwheat has an optimum germination range between 20-30°C. It is important to note that this crop germinated at T° of 15 and 35°C which could be due to the origin of the seeds and/or the environmental conditions where the material was developed.