

# Germination response of buckwheat grown in northern Patagonia to different salt stress conditions.

Aldana Keil <sup>1</sup>, Patrica Boeri <sup>1,2</sup>, Juan Jose Gallego <sup>3</sup>, Sergio Eduardo Quichán <sup>1</sup>, Fany Zubillaga <sup>1,2</sup>

- 1) Universidad Nacional de Río Negro, Sede Atlántica.
  - 2) CIT -CONICET-Río Negro. Viedma, Río Negro, Argentina.
  - 3) INTA Valle Inferior
- mzubillaga@unrn.edu.ar



## INTRODUCTION

Buckwheat is a recently introduced crop in the Lower Rio Negro Valley. This site is characterised by a great variability of soils and sites with salinity. In this sense, germination has been considered as the most sensitive stage to salinity in the life cycle of a plant. Moreover, a saline environment causes a delay in germination, affects plant growth and reduces grain yield and dry matter production. The objective of this study was to determine the germination response of locally produced buckwheat to different sodium chloride (NaCl) salt solutions



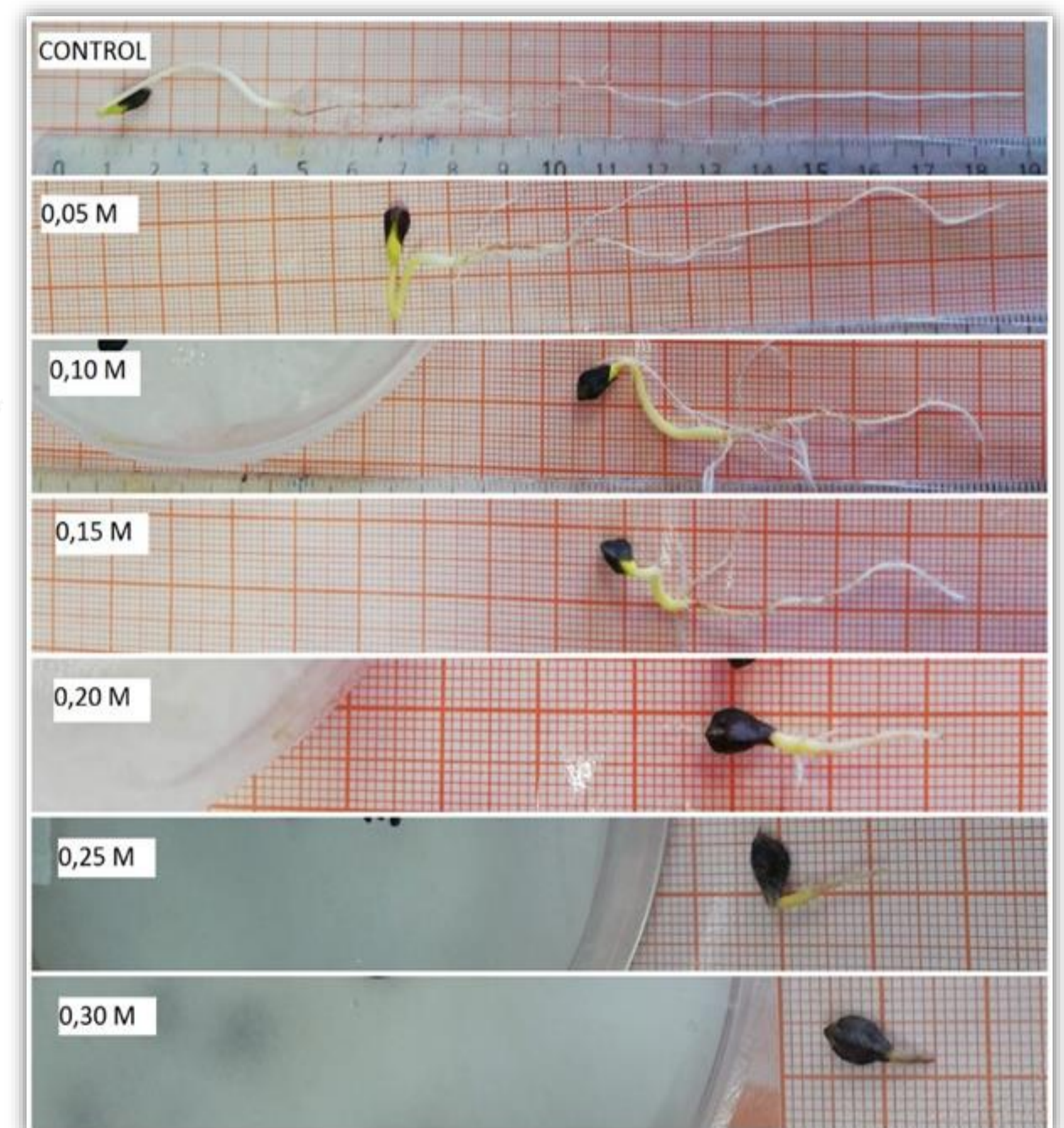
## MATERIALS AND METHODS

Germinations were carried out in a germination chamber at 25°C. Seeds previously disinfected (1% hypochlorite for 30') were placed in Petri dishes conditioned with cotton, paper and properly moistened with the corresponding saline solution. The saline solutions tested were: 1) Control: H<sub>2</sub>O, 2) 0,05 M NaCl, 3) 0,1 M NaCl, 4) 0,15 M NaCl, 5) 0,2 M NaCl, 6) 0,25 M NaCl and 7) 0,3 M NaCl.

Each treatment was represented by five Petri dishes (with 20 seeds each). Germinated seeds were counted every 24 hours for seven days. The parameters evaluated were: germination capacity (GC); germination energy (GE); mean germination time (MGT), and total radicle length (TRL). 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%.

## RESULTADOS

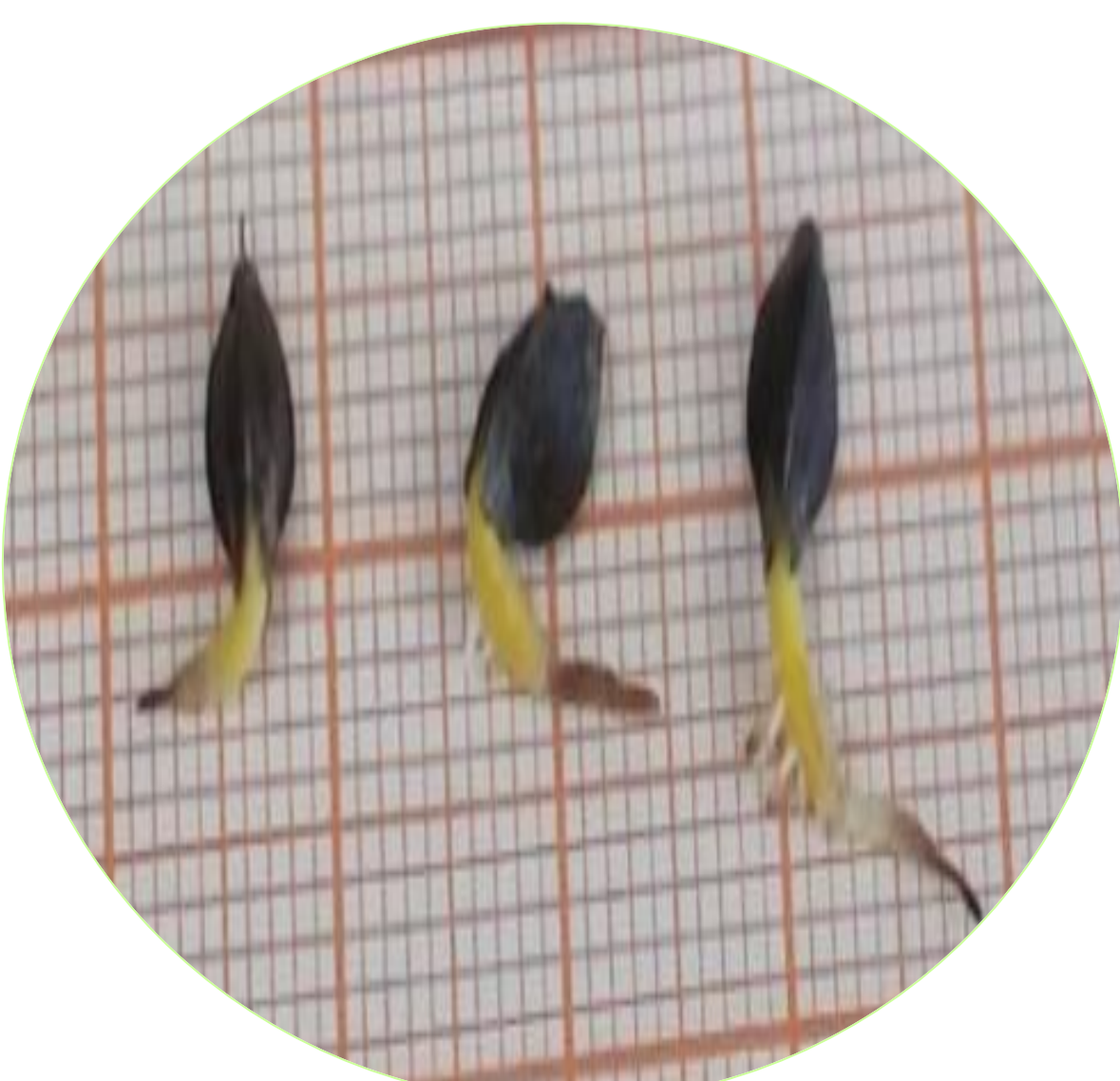
NaCl [M]	CG (%)	EG (%)	MGT (%)	TRL (cm)
Control	100,00 a	99,93 a	1,60 c	20,19 a
0,05	100,00 a	99,97 a	2,83 b	15,69 b
0,10	88,00 b	99,84 a	2,16 b	8,58 c
0,15	90,00 b	94,88 b	2,89 b	4,94 d
0,20	80,00 c	94,90 b	3,48 a	2,75 e
0,25	84,00 bc	95,00 b	3,05 ab	1,02 ef
0,30	23,00 d	49,88 c	3,56 a	0,36 f



CG and EG decreased with increasing salt concentration. However, values above 80% were obtained up to NaCl 0,25 M. A reduction of 80% for CG and 50% EG respect to the control was observed for NaCl concentration of 0,30 M.

Salt concentration significantly reduced TRL with a reduction of more than 95% for NaCl 0,30 M

MGT tended to increase with increasing salt concentration, doubling the time of the control at the highest concentration



## CONCLUSIONS

Increased NaCl in the medium reduced the germination percentage and increased the mean germination time. However, buckwheat has shown tolerance to salinity up to concentrations of 0,25 M with germination rates of 80%. These results suggest that the crop is tolerant to parts of the valley with a certain degree of salinity, although its behaviour under field conditions needs to be evaluated.