

Germination of licorice seeds from Bulgan river basin, Mongolia

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Introduction and Objectives

Research question:

- Is there any possibility to improve livelihood in the area exploiting the value of medicinal plants?

Main aim:

- To cultivate some medicinal plants for conserving genetic resources of pre-selected rare plants and increasing local people's income

Objectives:

- To collect seeds of the licorice, as one of the selected key medicinal species in the area

Materials and Methods

Glycyrrhiza uralensis Fisch. ex DC. (Chinese licorice)

- A perennial herb (Fig. 1A)
- Used as a traditional drug in China for 2000 years
- Widely used in the manufacture of food, tobacco and cosmetics as it contains glycyrrhizin, a non-sugar sweetener
- Altay-Dzungarian people use for treating cough and high temperature caused by respiratory diseases

Seed collection

- Four populations in the Bulgan River basin (Fig. 1B), summer 2012
- Air dried, preserved at room temperature

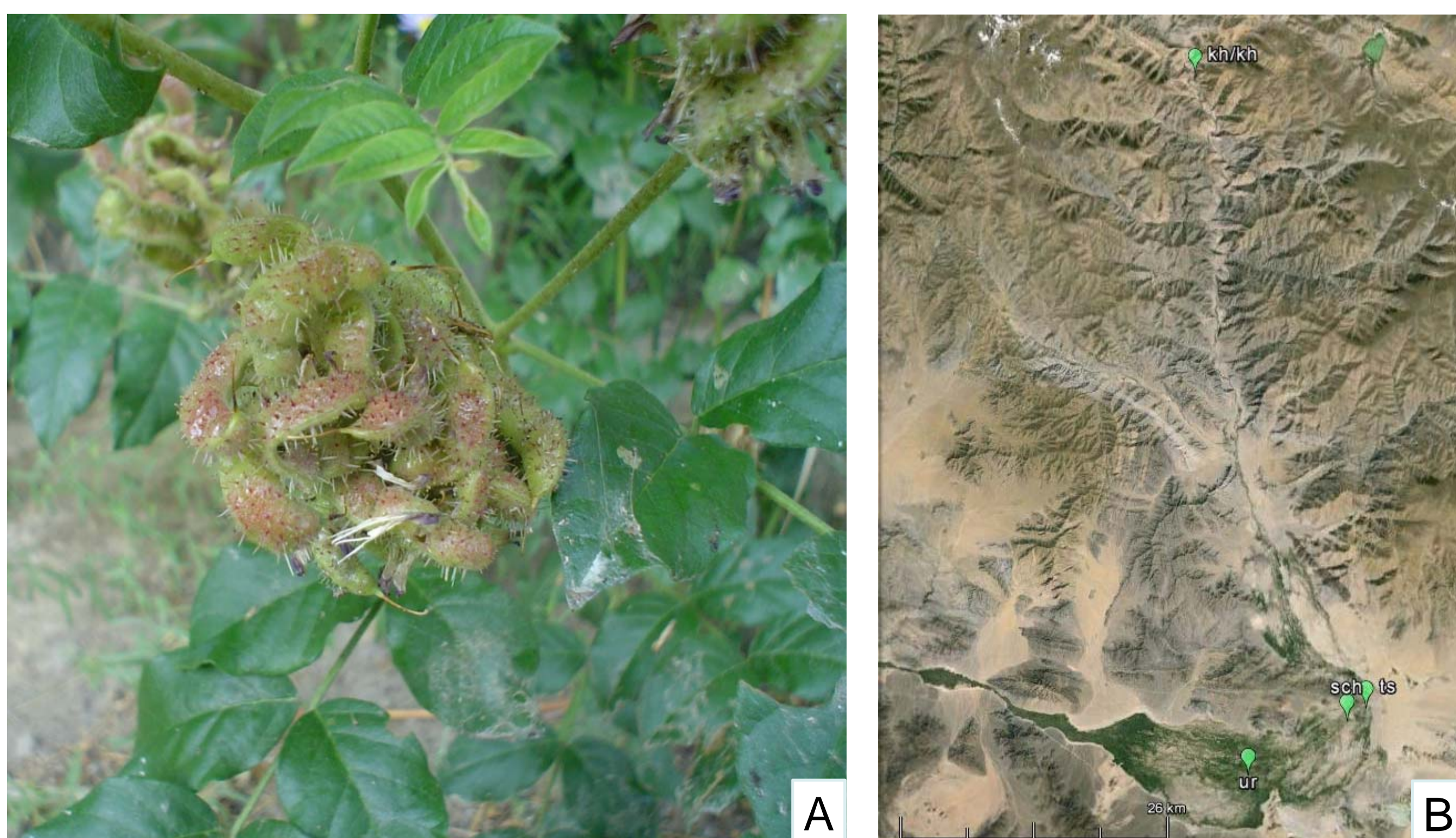


Figure 1. A - a fruiting individual; B - sampling area

Germination experiment:

- Spring 2013, Uni Kassel, Witzenhausen, Germany
- Greenhouse (+22 °C), commercial soil : sand (7:1)
- 4 pop's x 4 replicates x 20 seeds x 12 treatments:
- Chilling (0 °C, -10 °C, -20 °C for 1 day, 7 days)
- Concentrated sulphuric acid (60 min, 120 min)
- Mechanical (sand paper K100)
- Hot water (1 min, 2 min)
- Untreated (control)

Results

- Days to first emergence varied a lot in most of the treatments and also in populations (3-19 days). It was the shortest in seeds scratched with sand paper (3-4 days) and immersed in hot water (4 days), followed by seeds immersed in acid (6 days).
- Effects of chilling on germination are limited. Overall germination (Fig. 2) and days to first emergence (11.4 ± 1.0) were hardly enhanced by the treatment.
- No significant differences in the measured parameters were found between populations.

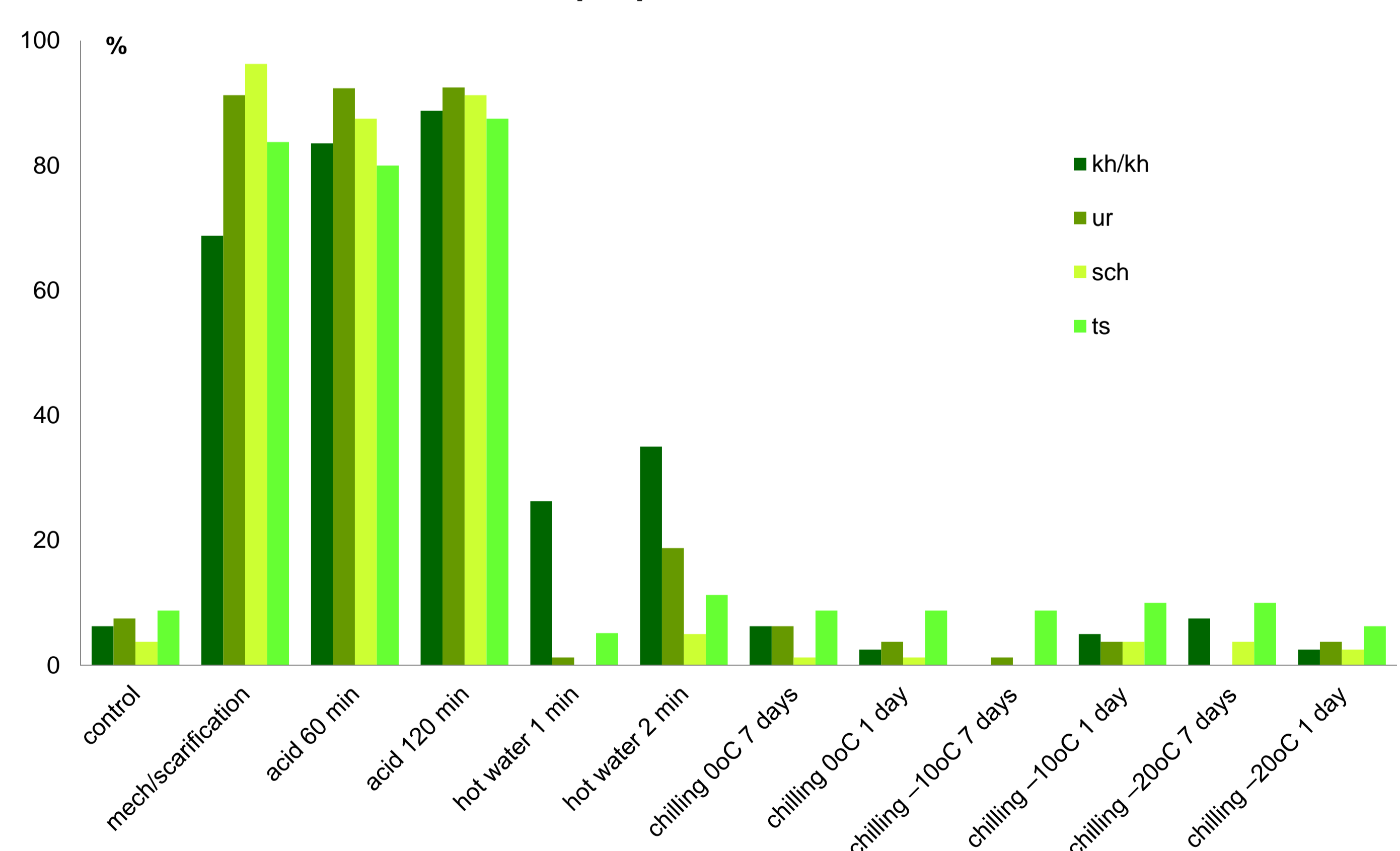


Figure 2. Germination rate of licorice seeds in the greenhouse

Conclusions

- Licorice seeds are slow to germinate and total germination percentage is low.
- Mechanical (sand paper) and acid scarification methods enhanced germination of the seeds.

