

Effects of Tap and DI Water on Lettuce Germination

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Introduction

The mineral content in the water can affect seed germination. Some seeds are sensitive to high levels of certain minerals or ions present in water, such as sodium or chloride, which can inhibit germination. While tap water is readily accessible, it typically contains a variety of minerals. In contrast, deionized (DI) water is produced through a process that removes nearly all ions, resulting in a water that contains little to no ions.

Objective: To investigate the effects of tap and DI water on the seed germination of lettuce

Hypothesis: The germination rate will be higher with DI water compared to tap water due to the lower concentration of ions in DI water.

Materials and Methods

Plant Materials

- Lettuce (*Lactuca sativa*) 'Adriana'
- Lettuce (*Lactuca sativa*) 'Rouxai'

Growth Conditions

- Substrate: Rockwool
- Air temperature: 24°C
- Light intensity: PPFD of 200 $\mu\text{mol m}^{-2} \text{s}^{-1}$

Treatments

	Tap water	DI water
Electrical conductivity	1.19 mS/cm	0.36 mS/cm
pH	6.0	6.0

Results

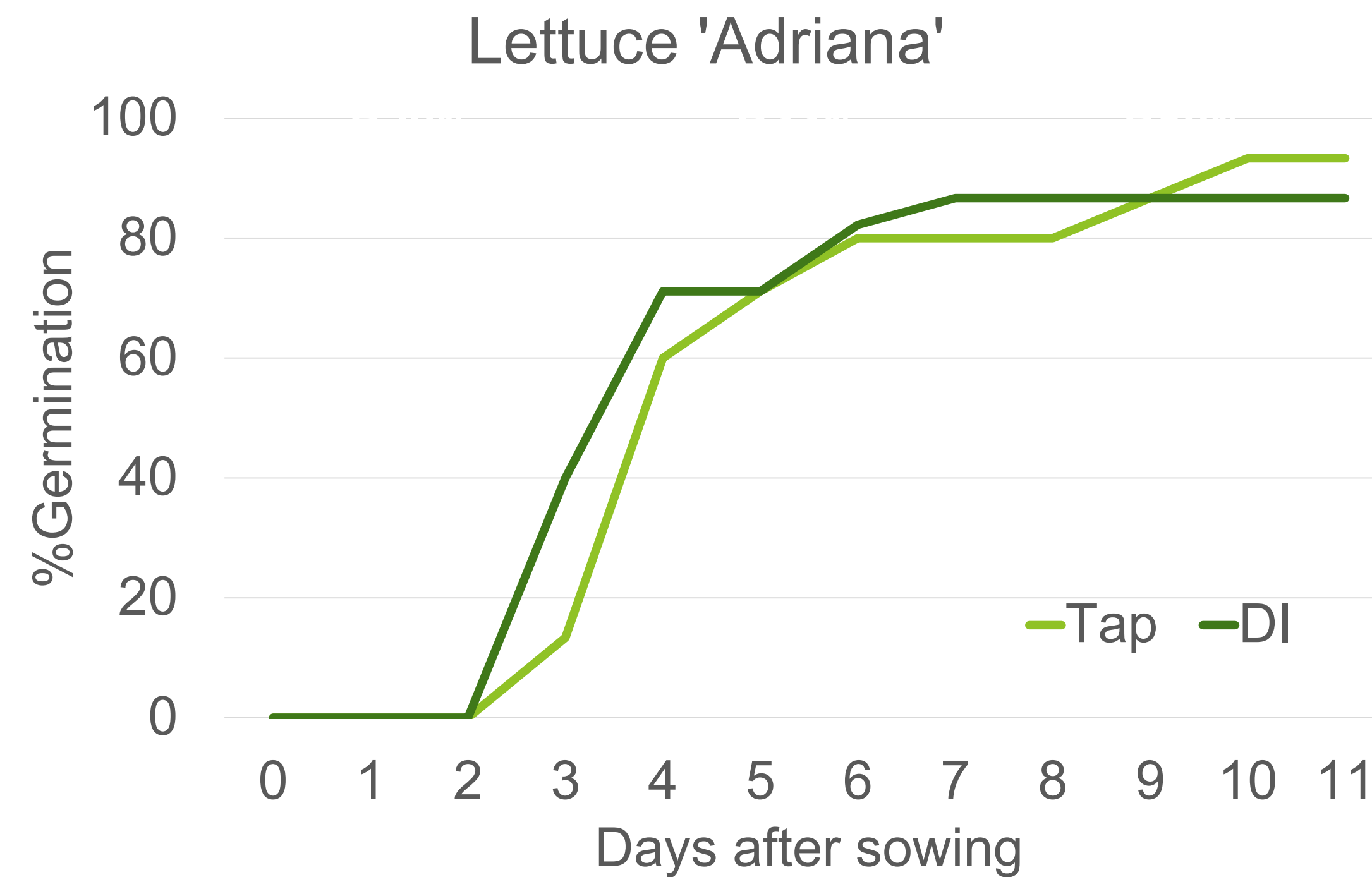


Fig 1. Comparing the germination percentage (%) of lettuce 'Adriana' under tap and DI water.

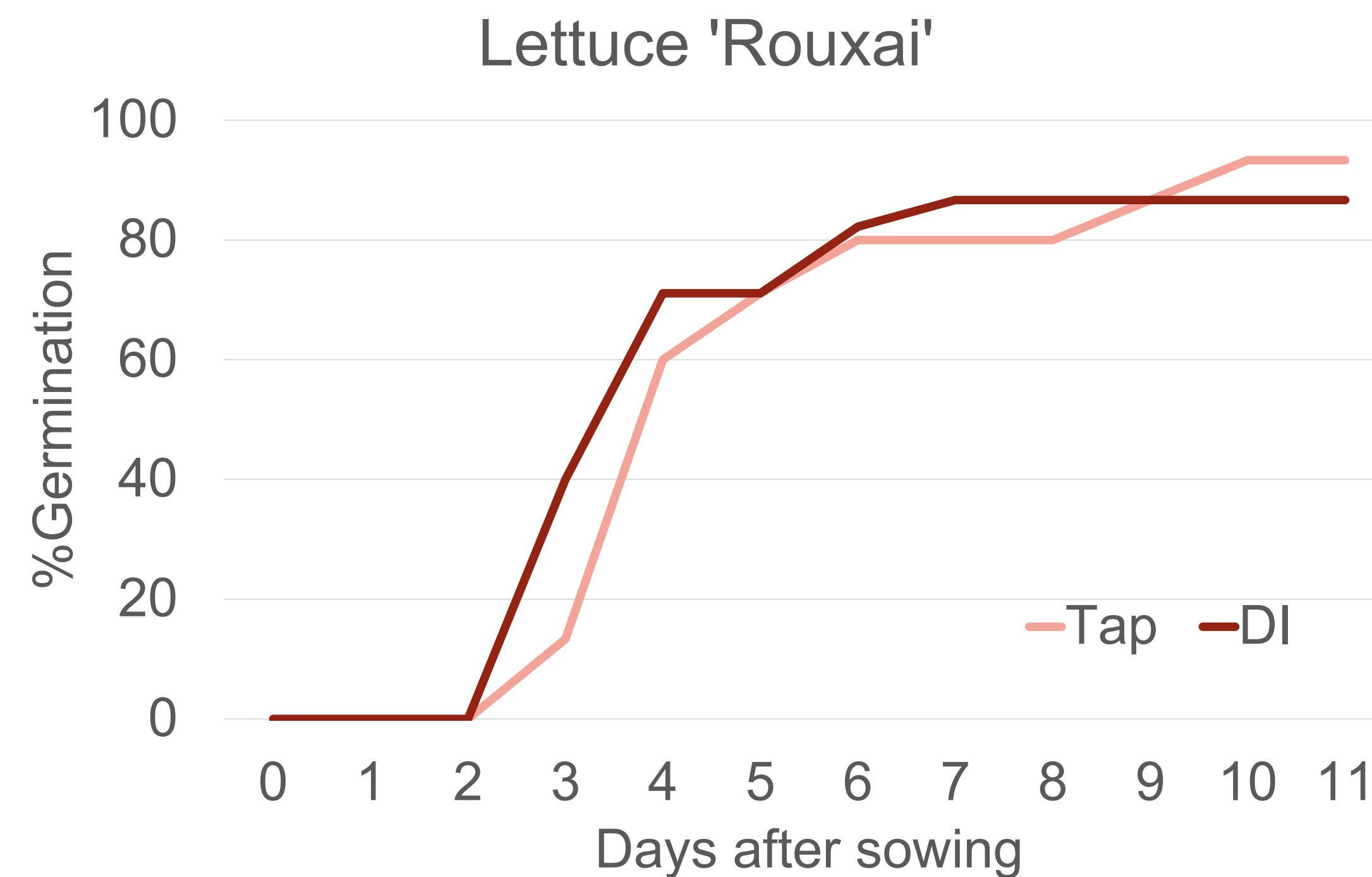


Fig 2. Comparing the germination percentage (%) of lettuce 'Rouxai' under tap and DI water.

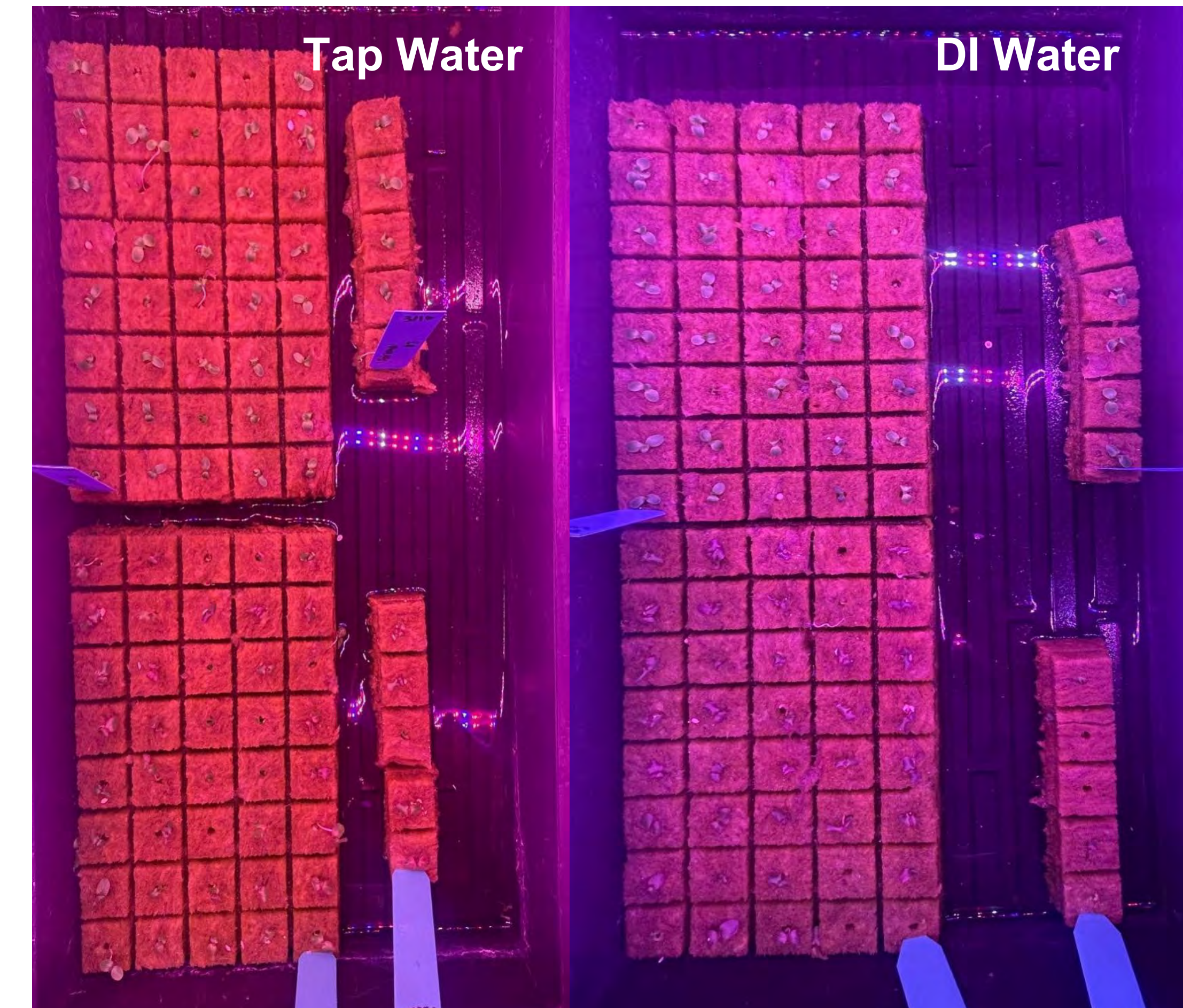


Fig 3. Germinated seeds of lettuce 'Adriana' (top) and 'Rouxai' (bottom) in each tray with tap or DI water

Conclusions

- Tap water had higher electrical conductivity than DI water, which indicates higher ion contents.
- In both lettuce 'Adriana' and 'Rouxai', the germination speed was higher under DI water than tap water.
- However, the total number of seeds germinated was similar in both tap and DI water.