The Torch
Vol. 2 (4)

The need for salt-resistant wheat

Aditi Doshi

There is an imminent need for the creation of a genetically modified wheat crop, capable of surviving in higher salinity as in seawater. The world expects to witness a massive population spike by 2050 with a predicted population of 9 billion. The demand for wheat from this increased population is expected to rise by 60%. Wheat is the second most important food crop in the world after rice. It is a staple in many developed and less-developed countries, and is high in nutrition, providing 20% of the protein for more than half of the world’s population. To cope with the rising food demands, it is essential to find more arable land for the growth of crops. Salt-tolerant wheat will allow for its growth in lands once considered non-arable owing to its high salt content, in turn, providing more cultivation space. Wheat and rice together utilise 70% of the water used in agriculture. Wheat is an extremely water-intensive crop that utilises 900 litres of freshwater per kilogram. With the rising demand for wheat, a huge proportion of already limited freshwater sources would be utilised. Humanity relies on 1% of the total 2.5% of freshwater that exists for household activities, such as cooking and cleaning, agriculture, industries and water consumption in the diet. By utilising saltwater tolerant transgenic wheat, it will be possible to irrigate using non-fresh water sources. This will allow fresh water to be diverted towards human consumption and reduce the further impact of irrigation on freshwater sources, preventing humanity from consuming at a rate that the environment cannot keep up with.

In the last 40 years, one-third of the world’s arable land has been lost as a result of soil degradation, erosion and salinisation. The total amount of land used for agricultural practices is 1.5 billion hectares, out of which, wheat is grown on more than 0.24 billion hectares. This is a larger area than for any other crop. With an increased food demand, these areas are bound to be over cultivated at an unsustainable rate, leading to expensive soil recovery methods. Salinisation is a huge threat to the environment and human health. In total, salt-affected soils represent about 7% of the land, which is about 1 billion hectares. Certain crops, such as rice, sugarcane, beans and peas are extremely sensitive to salt. Many of the soils in which they are grown are being heavily impacted by salinity, leading to a tremendous decrease in crop yields. The growth of vegetation on salt impacted soils causes a decrease in the salt concentration in the topsoil. In this way, wheat can be used to improve soil conditions, and also provide economic gain to the farmer while branching out towards salty soils that were once considered non-arable, to avoid the overuse of soils.

Keywords: wheat, salt resistant, salt water, hunger, water scarcity, salinization

Citation:
Aditi Doshi. The need for salt-resistant wheat. The Torch. 2021. 2(4). Available from:
https://www.styvalley.com/pub/magazines/torch/read/the-need-for-salt-resistant-wheat.