

# Hydrogel polymer improves agrophysical properties of soil

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Red Flowering Currant - *Ribes sanguineum* Grossulariaceae. Credit: [brewbooks](#) /Wikimedia Commons, [CC BY-SA 2.0](#)

Arid regions of the world have always struggled to grow crops but climate change and drought coupled with stronger winds can lead to a greater rate of soil erosion exacerbating the problem. Work in the *International Journal of Agricultural Resources, Governance and Ecology*, looks at how the problems facing horticulture might be addressed with the use of innovative technology

Alevtina Danilova, Andrey Vinokurov, and Elena Isakova of the Altai Botanic Garden part of the Kazakh Academy of Sciences in Leninogorsk, and Naziya Suleimenova and Yerzhan Abildaev of Kazakhstan National Agricultural University in Almat, Kazakhstan, have focused on a group of fruit trees and other trees and shrubs grown in the arid South-East and East Kazakhstan. They have investigated the water-saving potential of an absorbent hydrogel polymer "AQUASORB," which can improve the agrophysical properties of [soil](#). Aquasorb is a polyacrylamide that can absorb 400 times its own weight in water. The soluble material has been used elsewhere to flocculate irrigated soil, which improves water penetration, soil aeration, and reduces soil erosion.

In their experiments, with test growing sites, the team found that the use of granules of this polymer at up to just 2 kilograms per cubic meter of soil, increases the total and productive moisture reserves in the soil. This in turn leads to a significant (11%) increase in the holding capacity of the leaves of the trees and shrubs. Species tested included *Thuja occidentalis* (white cedar), *Berberis iliensis* (barberry), *Crataegus oxyacantha* (hawthorn), *Padus virginiana* (bird cherry), *Ribes* (currant), *Malus* ([apple tree](#)), *Picea obovata* (Siberian spruce), *Betula pendula* (silver birch), and *Acer platanoides* (Norway maple). This increase in holding capacity, the team explains, boosts their potential to cope with dry periods.

**More information:** Alevtina Danilova et al, Development of

horticulture in arid conditions of Kazakhstan with the use of innovative technology to hydrogelisation 'AQUASORB' in the soil. *International Journal of Agricultural Resources, Governance and Ecology*. [DOI: 10.1504/IJARGE.2021.121675](https://doi.org/10.1504/IJARGE.2021.121675)

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