

POLYMER GELS IN VEGETABLES

A. V. Yanchenko, A. Yu. Fedosov, A. M. Men'shikh

*All-Russian Research Institute of Vegetable Growing - branch of the Federal State Budgetary Scientific Institution
«Federal Scientific Center for Vegetable Growing»,
E-mail: laboratoria2008@yandex.ru*

Nearly 40% of the world's food supply comes from irrigation. By 2080, net crop water requirements are projected to increase by 25% worldwide, despite improvements in irrigation efficiency associated with changes in rainfall patterns, global warming and longer growing seasons for cultivated plants. Vegetables are 80–95% water. The water requirements of vegetable crops are relatively high, especially in arid and semi-arid areas due to the high radiation load observed throughout the year, but also in more temperate and subtropical zones as periodic drought events and heatwaves often occur. The yield and quality of vegetable products are often affected by drought. The introduction of water-saving irrigation management methods for vegetable crops can significantly increase yields and quality of vegetable products. Hydrogel (Super Absorbent Polymer) is a water-retaining, biodegradable amorphous polymer that can absorb and retain at least 400 times its original weight of water and at least 95% of the stored water is available for plant uptake. Being mixed with soil, it forms an amorphous jelly-like mass when hydrated, and is able to retain water in the soil for a longer period slowly releasing it according to the needs of plants. The use of hydrogels in agricultural technologies can be a fruitful option for increasing vegetable crop yields in conditions of water deficiency.

Keywords: vegetable crops, polymer gels, moisture supply, productivity.