Drippers Scaling Inhibition of the Localized Irrigation System by Green Inhibitors Based on Plant Extracts

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Abstract : The Agadir region is characterized by a dry climate, ranging from arid attenuated by oceanic influences to hyper-arid. The water mobilized in the agricultural sector of greater Agadir is 95% of underground origin and comes from the water table of Chtouka. The rest represents the surface waters of the Youssef Ben Tachfine dam. These waters are intended for the irrigation of 26880 hectares of modern agriculture. More than 120 boreholes and wells are currently exploited. Their depth varies between 10 m and 200 m and the unit flow rates of the boreholes are 5 to 50 l/s. A drop in the level of the water table of about 1.5 m/year, on average, has been observed during the last five years. Farmers are thus called upon to improve irrigation methods. Thus, localized or drip irrigation is adopted to allow rational use of water. The importance of this irrigation system is due to the fact that water is applied directly to the root zone and its compatibility with fertilization. However, this irrigation system faces a thorny problem which is the clogging of pipes and drippers. This leads to a lack of uniformity of irrigation over time. This so-called scaling phenomenon, the consequences of which are harmful (cleaning or replacement of pipes), leads to considerable unproductive expenditure. The objective set by this work is the search for green inhibitors likely to prevent this phenomenon of scaling. This study requires a better knowledge of these waters, their physico-chemical characteristics and their scaling power. Thus, using the "LCGE" controlled degassing technique, we initially evaluated, on pure calco-carbonic water at 30°F, the scaling-inhibiting power of some available plant extracts in our region of Souss-Massa. We then carried out a comparative study of the efficacy of these green inhibitors. The action of the most effective green inhibitor on real agricultural waters was then studied.

Keywords : green inhibitors, localized irrigation, plant extracts, scaling inhibition
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