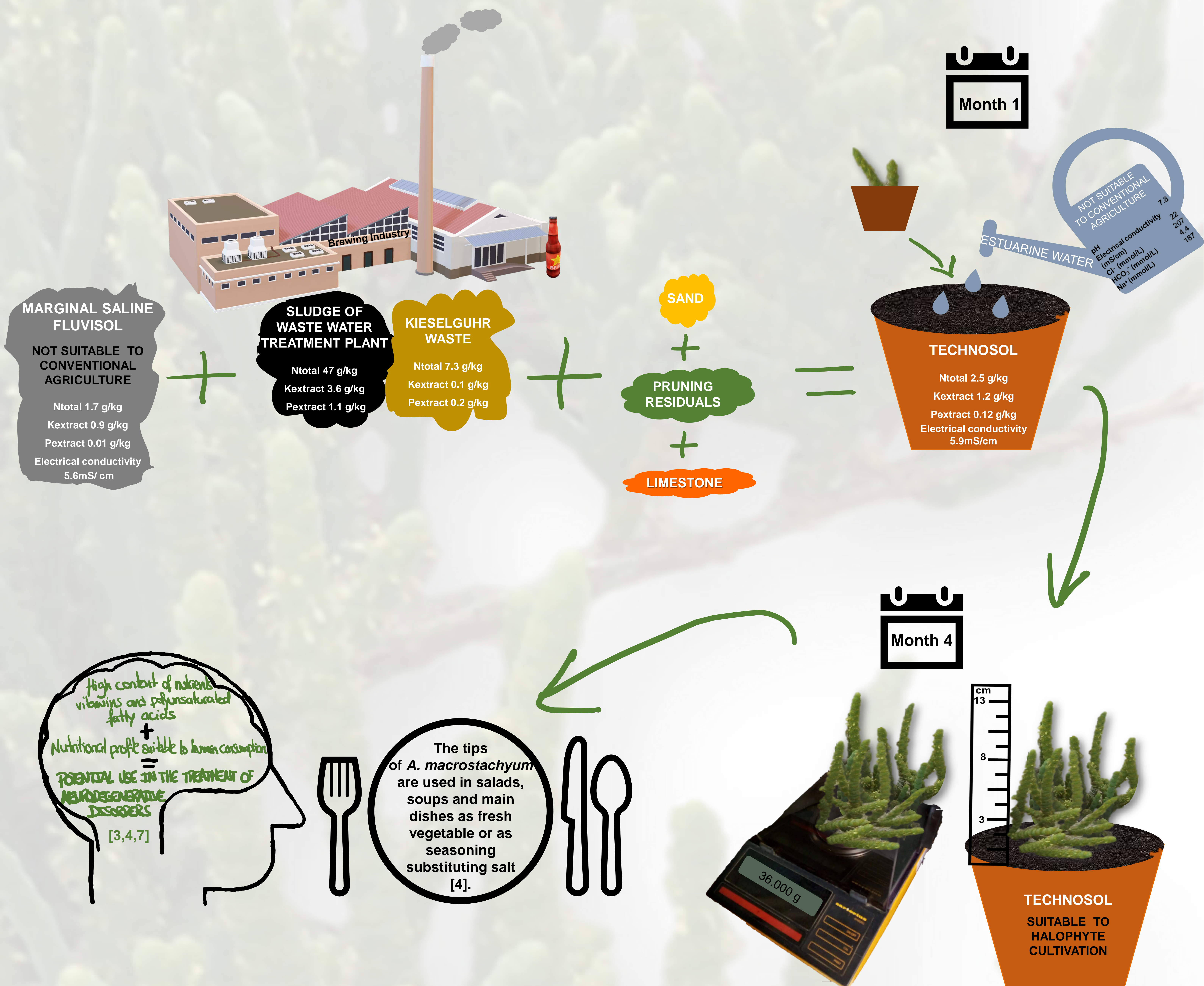


# New sustainable method of edible halophyte cultivation using underused resources

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Halophyte species are plants thriving in high salinity environments due to defence morphological, anatomical, and biochemical mechanisms they present [1,2]. Some halophytic species as *Arthrocnemum macrostachyum* (Moric.) Moris are rich in nutrients, vitamins, proteins and polyunsaturated fatty acids, essential for the human diet [3,4]. In last decades, there has been a growing interest in these species and its compounds [5,6,7,8]. However, most of wild species are over collected leading a decrease of native populations. Therefore, it is necessary to develop methods of halophytes cultivation to obtain income provided by their properties without risking wild populations [9]. Salinisation is a process which leads to soil degradation, being one of the most treats to conventional agriculture since the salt sensitive crops do not tolerate saline soil and saline water irrigation [10]. This study aims to develop a new sustainable method to cultivate *A. macrostachyum* by producing a Technosol, man-tailored soil dominated by anthropogenic material [11] constituted by a saline Fluvisol and subproducts/wastes and irrigated by estuarine water.



The underused subproducts/wastes such as brewing residues are rich in Ntotal, Kextractable and Pextractable and contributed to increase the nutrient concentration of the saline Fluvisol. The pruning residues improved the soil texture/aggregation and the sand (mostly quartz) and limestone (gravel dimension) improved the soil texture/aggregation enhancing its permeability [12]. The Technosol created allowed the growth and development of *A. macrostachyum* even under estuarine water irrigation. Results of this study showed that it is possible to cultivate valued halophytes using cost-effective subproduct/wastes and underused resources as marginal Fluvisol soil and estuarine water, without competing for scarce resources as fresh water and arable land used by conventional agriculture. Thus this work contributes to the development of saline land and to improve knowledge on halophytes cultivation without compromising their wild populations.

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