

Growth and yield response of forage corn (*Zea mays* L.) cultivation to inoculation with *Azospirillum* in Mediterranean environments: a preliminary result.

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Bacteria of the genus *Azospirillum* are able to fix atmospheric nitrogen and have been associated with the roots of various grasses and tropical and subtropical nonleguminous plants. Several plant species have differently responded to field inoculation with this soil microorganism, and under certain favorable conditions significant benefits and increases in plant growth and biomass yield have been obtained. The aim of the experiments was addressed to evaluate the effect of seed *Azospirillum* inoculation on the productivity of corn in a Mediterranean area (Southern Italy). The trials were carried out at two sites: Foggia (15° 13E, 41° 18N, 76m above sea level (asl), with 449 mm of annual rainfall) and Baragiano (PZ) (15° 36E, 40° 41N, 620m asl, with ~600 mm of annual rainfall), under irrigated and rainfed condition, respectively. The inoculation with *Azospirillum spp* (provided by Graminosoil srl) was applied to the seeds by using a water suspension with a concentration of 10⁹ colony forming units (CFU), 30 minute before sowing. The inoculation treatment was compared with N-fertilizer application at a rate of 200 kg ha⁻¹. At both sites, dry matter yield was slightly greater in the inoculation treatment with respect to N-fertilizer application, with an average increase of 15% at Foggia and 10% at Baragiano. By contrast, no significant differences were found between treatments on nutritional quality parameters (crude protein, crude fibre, crude lipid and ash) of the dry matter. The association *Azospirillum*-corn as compared to N-fertilization, influenced the architecture of the plants by reducing plant height and weight of upper straw and leaves. Although yield responses and benefits suffice to justify inoculation of the crop are not yet very clear and requires further investigation, this preliminary results suggest that the inoculation with *Azospirillum* may represent a means of increasing corn production without resorting to costly and ecologically unfavorable N-fertilizer application.