

البحث السابع

Mahmoud A. Abdelfattah, Mostafa M. Rady , Hussein E. E. Belal, **Eman E. Belal**, Rahmah Al-Qthanin , Hatim M. Al-Yasi and Esmat F. Ali (6 August 2021). Revitalizing Fertility of Nutrient-Deficient Virgin Sandy Soil Using Leguminous Biocompost Boosts *Phaseolus vulgaris* Performance. *Plants*, 10, 1637.

تنشيط خصوبة التربة الرملية البكر التي تفتقر الي العناصر الغذائية باستخدام السماد الحيوي يعزز أداء الفاصوليا.

ملخص البحث باللغة الانجليزية:

During the 2019 and 2020 seasons, nutrient-deficient virgin sandy soil was examined along with the investigation of the response of *Phaseolus vulgaris* plants to soil application with biocompost in integration with chemical fertilizers applied to soil and plants. Four treatments (100% of the recommended NPK fertilizer dose (control), 75% NPK applied to soil + 25% foliar spray, 75% NPK applied to soil + 25% foliar spray + leguminous compost (CL), and 75% NPK applied to soil + 25% foliar spray + CL containing *Bacillus subtilis* (biocompost; CLB)) were applied in a randomized complete block design. The 75% NPK applied to soil + 25% foliar spray + CLB was the best treatment, which exceeded other treatments in improving soil fertility and plant performance. It noticeably improved soil physicochemical properties, including available nutrients, activities of various soil enzymes (cellulase, invertase, urease, and catalase), soil cation exchange capacity, organic carbon content, and pH, as well as plant growth and productivity, and plant physiobiochemistry, including nutrients and water contents, and various antioxidant activities. The results of the 2020 season significantly outperformed those of the 2019 season, indicating the positive effects of biofertilizers as a strategy to combine soil supplementation with NPK fertilizers and allocate a portion of NPK fertilizers for foliar spraying of plants in nutrient-deficient sandy soils.

