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LIFE Environment and Resource Efficiency

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Annex B2 – Analysis of matrices

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Introduction

The organic matrices selected for the experiment were: manure, solid fraction of digestate and compost. All the three biomasses are rich in stable organic matter, in nutrients, and they can act, at the same time, as fertilizers and amendants in the soil. This is important to support both plants, for mineral elements (N, P, K in particular), and soil for fertility (organic carbon keeping).

Manure is a valuable source of nutrients for crops and can improve soil productivity and fertility (in brief soil quality). Nutrients content, primarily nitrogen, phosphorus, and potassium, are important when calculating land application rates and determining treatment techniques. Nitrogen, phosphorus, and potassium are the major nutrients of manure. Moreover, its solid consistency allows its best distribution through the prototype of the machine built by Casella Macchine Agricole (CASL).

The agronomic use of digestate as a fertilizer should not only take into account the simple addition of fertility elements in place of synthesis fertilizers (i.e. urea), but also the possibility of closing the carbon cycle and the nutrients that are the key to reading a sustainable agriculture that reflects the centrality of matter recovery as a means of sustainable agriculture.

Compost can be used as a fertilizer and source of organic matter, then destined for agronomic or floriculture purposes. Its use, due to its content of organic matter, is able to improve different soil characteristics (i.e. structure, cation exchange capacity, water holding capacity, microflora biodiversity) and the availability of nutrients (phosphorus and nitrogen). As a biological activator it also increases the biodiversity of the microflora in the soil.

A total of 39 (13 for the first campaign, 12 for the second and 14 for the third) matrices has been analysed. See Annexes for the detail of results.