

CERES Policy

Soil Organic Matter, Organic Fertilisation, Humic Substances and Humic Acid Extracts in Organic Farming

1	Background	
1.1	Soil Organic Matter	Soil Organic Matter (SOM) is the key component of soil fertility in organic farming.
1.2	Humic substances from leonardite	Humic substances are a natural component of SOM. Due to their beneficial effects on plant growth, these substances are also extracted from geological deposits called “leonardite” and used as soil amendments or plant growth promoters in organic and conventional farming. NOP and Regulation (EC) 889/2008 now allow humic acid extracts, while JAS explicitly prohibits them.
2	Normative framework	
2.1	Soil Organic Matter	<ul style="list-style-type: none"> • Reg. (EC) 834/07, Art. 5: “...organic farming shall be based on the following specific principles: (2) the maintenance and enhancement of soil life and natural soil fertility, soil stability and soil biodiversity preventing and combating soil compaction and soil erosion, and the nourishing of plants primarily through the soil ecosystem,” • NOP § 205.203 Soil fertility and crop nutrient management practice standard: “(a) The producer must select and implement tillage and cultivation practices that maintain or improve the physical, chemical, and biological condition of soil and minimize soil erosion. (b) The producer must manage crop nutrients and soil fertility through rotations, cover crops, and the application of plant and animal materials. (c) The producer must manage plant and animal materials to maintain or improve soil organic matter content in a manner that does not contribute to contamination of crops, soil, or water by plant nutrients, pathogenic organisms, heavy metals, or residues of prohibited substances.” • JAS, Notification 1605, Art. 2 (Principles of Production of Organic Agricultural Products): “exercising the farmland productivity derived from original soils in order to sustain and enhance the natural recycling function of agriculture”.
2.2	Humic and fulvic acids from leonardite	<ul style="list-style-type: none"> • NOP § 205.601 Synthetic substances allowed for use in organic crop production: “(j) As plant or soil amendments: (...) (3) Humic acids—naturally occurring deposits, water and alkali extracts only.” • Reg. (EC) 889/08: Through the amendments introduced by Reg. (EU) 2019/2164, humic and fulvic acids are now included in Annex I. • JAS, Notification 1605: Table 1 does not list humic acids. The competent Japanese authority MAFF has informed repeatedly that they are not allowed. Raw leonardite, however, is considered to be allowed also under JAS.
3	Terms	<ul style="list-style-type: none"> • Soil organic matter (SOM): SOM is normally used as synonymous of “humus”. It includes living organisms, dead plant, animal and microorganism residues and exudates in different stages of decomposition and transformation, and a relatively stable fraction often called “humic acids”. Even though most agricultural soils do not contain more than 1 to 4% of SOM, soil scientists agree that this small fraction plays an extremely important role for all aspects of soil fertility: It improves soil structure, reduces erosion and compaction, increases aeration, water retention, and cation exchange capacity, stabilizes soil pH, and is an important reserve of nutrients (N, P, S). • Humic substances: Are a chemically extremely diverse and only vaguely described group of compounds, defined only by their complexity and stability. Many soil scientists subdivide this group into fulvic acids, humic

		<p>acids, and humins, in order of increasing stability and age. The oldest organic particles in soil were found to date from around 3,000 years back. In the present paper, we do not distinguish between the different humic substance fractions. In addition to the SOM benefits described above, there is wide scientific evidence that humic substances have direct plant growth promoting effects.</p> <ul style="list-style-type: none"> • Leonardite: Fossil deposits most probably derived from lignite. Most commercial humic acid preparations are obtained by alkaline extraction from leonardite. Leonardite is also used as a powder as soil amendment.
4	Policy	
4.1	Maintaining and Increasing SOM:	<p>Organic farmers are obliged to manage soil in a way which contributes to this objective. This includes:</p> <ul style="list-style-type: none"> • Some kind of organic fertiliser (compost, manure, mulch, green manure) must be used in quantities which are substantial enough for achieving this purpose. A general rule of thumb for "appropriate quantities" is 10 tons of organic fertilizer per hectare per year. This can, of course, not be implemented in a rigid way. Limited availability of organic residues tends to be a serious problem in arid and semi-arid regions. SOM mineralisation (= reduction) increases with tillage (including mechanical weed control), with decreasing soil cover, increasing temperature and precipitation. • There are cropping systems which effectively conserve SOM, without adding organic fertilisers: <ul style="list-style-type: none"> ○ Crop rotations including e.g. a 1 to 3 years "ley crop" of grass/clover, or grass or clover only, every 3 to 7 years. ○ Agro forestry systems with little tillage and in which the natural litter fall contributes sufficient organic residues to soil. ○ Orchards in which soil is covered by natural vegetation during most of the year. ○ Farms where abundant weeds are incorporated into soil, having an effect similar to green manuring. <p>CERES will not require fertiliser application in such situations.</p> • Organic farmers should try to solve crop nutrient deficiencies first of all by proper SOM management and organic fertilisation. Only if the described measures have proven not to be sufficient, additional mineral or liquid fertilisers or micronutrients can be used.
4.2	Conditions for use of humic and fulvic acid extracts	<p>Humic and fulvic acid extracts, and similar substances, can only be used as a complement, not as a substitute to proper SOM management as described under (4.1).</p>
5	Related documents	<ul style="list-style-type: none"> • 3.2.44: Brief Info on Nitrogen in Organic Farming (Inf) • 4.1.10: CERES Policy on Crop Rotation and Legumes (Pol)