Future generations do not need to live in polluted environments

2017-12-03

Has everyone who has studied technical, chemical, sociological, financial, legal and political education missed basic knowledge in biology - learning about life?

All material in residues and waste derived from plant and animal kingdom can be used as a raw material to produce biogas and biofertilizers, provided that aqueous and nitrogenous materials are mixed in the correct proportion with dry coal-rich materials which are often incinerated or gasified at present.

Of course, before organic residues and waste reach biogas plant, cascade utilization is recommended.

In the quest for knowledge-based sustainable society, they are required to raise the level of knowledge among decision makers, especially in energy transformations in biological systems.

There is urgent need for further development of energy conversion systems in local high-tech biogas plants that can positively contribute to 9 of the 17 targets described in SDG 2030 instead of copying unsustainable systems.

The following should be obvious to all decision makers:

BIOENERGY is the solar radiation energy that is converted under photosynthesis and biochemically bound in the biomass of the plants. In addition to the solar radiation energy, there must be carbon dioxide (CO_2), water (H_2O) and at least the following essential chemical elements: N, K, Ca, Mg, P, S, Cl, Fe, B, Mn, Zn, Cu and Mo. Stimulating elements are considered Co, Cr, Ni, V, Sn, Li, F, Se, Si, etc.

Bio means life; biology is learning about life. Bioenergy should mean the energy of life. Biomass is a mass of living organisms.

Bioenergy and chemical elements form biomass of plants, animals and humans. Focusing only on the return of phosphorus to cultivated fields is incorrect because measures to extract only phosphorus with thermal methods are very energy-intensive and hazardous for environment and health.

With biological methods in closed systems, microorganisms convert bioenergy from biomass into methane in biogas. Some bioenergy is lost in the process, but some remains in biofertilizers in partially metabolized organic structures and in the biomass of microorganisms together with all the above mentioned chemical elements.

It is time to explain how much bioenergy is present in the raw material, which consists of residues and waste originating in plant and animal kingdom, how much is lost during the process, how much can get into biogas and then remain in biofertilizers.

Bioenergy in biofertilizers is useful for soil organisms that help the plants roots to absorb plant nutrient. Thus, the plants can increase the transformation of solar radiation energy into new bioenergy in the plants' biomass.

In thermal processes, losses of plant nutrients are never reported neither what losses mean for cultivated fields in terms of soil degradation both locally and globally. The knowledge that soil microorganisms need bioenergy to help roots uptake of nutrients and that they act as competitors against disease-causing microorganisms is neglected.

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Reduced opportunity to transform solar energy during photosynthesis to bioenergy in crops intended for food, feed and fiber is the greatest direct threat to climate, environment and health for future generations.

Questions:

1) Are individual politicians and other decision makers aware that funding's for the energy sector are unfavourable to the production of biogas and biofertilizers?

Thermal processes are prioritized such as waste incineration, cogeneration plants using "biomass", pyrolysis, thermal gasification, production of biochar and combustion of sludge - even though these processes are demonstrably unsustainable

• environmentally due to environmental and health-causing emissions, no microorganisms can survive

• financially due to losses of chemical elements (most plant nutrients are lost and usually replaced with energy consuming synthesis of synthetic fertilizers, usually only N, P and K)

• socially due to unfair way of allowing some citizens to work in unhealthy workplaces, especially when handling municipal waste and wastewater.

2) Who takes responsibility for conversion to sustainable management of residues and waste derived from plant and animal kingdom?

It is necessary to immediately invest in innovation throughout the entire system for efficient production of biogas and biofertilizers by supporting

• testing and further developing new collection systems for food and toilet waste (to provide inhabitants with easy-to-use devices that prevent the release of unhealthy aerosols that both pollute the air and create losses of bioenergy and plant nutrients)

• further development of pre-treatment equipment for raw material in biogas plants (both dry and wet materials should be well shredded and mixed in appropriate proportions to maximize yields)

• testing and further development of bioreactors suitable for dry matter content of about 30% (to increase yields, reduce costs for building bioreactors, and reduce both use and contamination of water)

• development of equipment for post-treatment / stabilization of biofertilizers (to reduce losses of plant nutrients and reduce unhealthy pollutions of the air)

• testing and further developing systems for energy conversion from biogas to electricity and heat / cooling as the use of biogas as vehicle fuel is ineffective. a) Some energy in the biogas is lost during upgrading. b) Combustion engines have low efficiency and therefore the energy of biogas can be used more efficiently for electric vehicles and for heating and cooling.

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