



Biogeosystem technique method for remediation of technogenically disturbed soils

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The actual improper maintenance of Earth's biogeochemical cycle is cause of biosphere's shrinking. Most of carbon exists in the form of lithosphere deposits, the primitive way of carbon sequestration out of biosphere is dangerous both for the biosphere and the climate. Further reduction of carbon content in biosphere and atmosphere leads to avalanche-like degradation of life. The rejection of current land-use industrial approach is proposed.

Correction of the biogeochemical cycle drivers will make the Earth's biogeochemical cycle abundant, and the biosphere and climate will become more predictable and certain, the conditions for life being will be better. The Biogeosystem Technique (BGT*) transcendental (not a direct imitation of nature) method is developed for the biogeochemical cycle drivers correction.

The BGT* pedosphere, water, waste management and plant growth transcendental approach is as follows.

Processing the soil illuvial horizon (the layer of 20–50 (30–70 cm) by milling equipment helps to overcome the soil compaction – the undesirable result of both soil evolution and industrial agrarian technology. New technology provides long-term (more then 40 years after single intra-soil milling processing) soil amelioration, reduces dead-end porosity, good soil structure is obtained for plant's growth.

Robotic intra-soil pulse continuous-discrete technology of plant's watering helps to distribute the water into the soil without disadvantages of standard irrigation technology. The method includes a direct injection of a small discrete dose of water by moveable syringe into the watering vertical soil cylinder of 1.5–2.5 cm diameter at depth from 10 to 35 cm. In a period of 5–10 min after injection the water distributes in predetermined resulted watering vertical soil cylinder of 2-4 cm diameter at depth from 5 to 50 cm by capillary, film and vapor transfer. Lateral distance between subsequent discrete injections is of 10–15 cm. The soil carcass around the predetermined resulted watering vertical soil cylinder is dry and therefore mechanically stable. Soil solution concentration is optimal for plant nutrition, plant's stomatal apparatus operates in a regulation mode – no excessive plant transpiration, evaporation and seepage of water from soil.

The waste recycling is provided while milling processing of soil illuvial horizon and intra-soil pulse continuous-discrete watering of plant by introducing into the soil of nutrition and soil-structuring substances including dispersed industrial, agricultural, biological waste, biochar, waste of biological product's gasification etc. The high waste application doses are possible. The first biogeochemical barrier on the "soil – root" border is high because of waste disperse dilution into the soil and low soil humidity.

The BGT* method provides a long-term stable high productive soil evolution, freshwater conservation, environmentally safe waste recycling, expanded high rate biological carbon phase in biosphere, is promising for agriculture, horticulture, viticulture, forestry, spread and stability of biosphere, the food, raw material and renewable bio-fuel production.

Key words: Biogeosystem Technique, intra-soil milling processing, pulse intra-soil discrete irrigation, safe waste recycling, biological productivity, certainty of biosphere.

The research was supported by projects of Russian Foundation for Basic Research, no. 16-35-60051, Grant of the President of Russian Federation, no. MK-3476.2017.5.