Respiration energy storage efficiency

Intercropping is a powerful practice to alter the allocation of photosynthetic carbon (C) to belowground ecosystems via promotion of diversified plant communities. The feedback of soil C stability to intercropping is controlled by microbial C use efficiency (CUE). Despite its significance, there is currently insufficient evidence to decipher how soil microbial ...

Anaerobic respiration is less energy-efficient but allows survival in habitats that lack oxygen. Within the human body, both aerobic and anaerobic respiration are important to muscle function. Muscle cells specialized for aerobic respiration provide endurance and those specialized for lactic acid fermentation support short but intense energy ...

Microbial respiration and growth and consequently CUE are dependent on numerous factors influencing microbial life in soil. Microbial respiration, which has been extensively studied in different soil systems has been shown to increase with short-term increasing temperature (Lloyd and Taylor, 1994, Fierer et al., 2006), water content (Davidson ...

Thermal-integrated pumped thermal electricity storage (TI-PTES) could realize efficient energy storage for fluctuating and intermittent renewable energy. However, the boundary conditions of TI-PTES may frequently change with the variation of times and seasons, which causes a tremendous deterioration to the operating performance. To realize efficient and ...

Abstract Data on the energy status and activity of pro-/antioxidant metabolism during photomorphogenesis of the rhizome apex of Achillea millefolium L. were obtained. At the photophobic stage of development, etiolated rhizome apices were characterized by increased respiration intensity and energy storage rate: the share of energetically efficient cytochrome ...

If 7.4 kcal of energy is conserved per mole of ATP produced, the energy conserved in the anaerobic catabolism of glucose to two molecules of lactate (or ethanol) is as follows: 2× [7.4kcal / 670kcal] ×100 = 2.2 % . Thus anaerobic cells extract only a very small fraction of the total energy of the glucose molecule by glycolysis.

Conceptual overview illustrating relationships between pedoclimatic conditions and energy use efficiency of root growth. High bulk density and flooding decrease soil gas transport capacity, resulting in (i) decreased cellular oxygen concentration (p(O 2)) in the root growth zone and (ii) a shift from aerobic to anaerobic metabolism.Furthermore, high bulk ...

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