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Human urine as organic alternative to chemical fertilizers: Positive feedback to food and environmental security

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Human urine is not a waste but rightly to say liquid gold out of place. The potentials of liquid gold have been proved in different spheres as urine therapy for its medicinal properties, refreshing drinking water during space sojourn, producing beer, generating electricity and with more ease as alternative to chemical fertilizers to relief a large masses of poverty trodden farmers from the burden of expensive chemical fertilizers. Human urine is an aqueous solution containing N (15-19%), P2O5 (2.5-5%), K (3.0-4.5%) C (11-17%) Ca (4.5-6%) and some growth promoting agents such as glucose, amino acids and vitamins. Because the composition of human urine reflects a well-balanced nitrogen rich and cost effective fertilizers, urine can play havoc in food, nutritional, water and environmental security, mitigation of poverty and improve the trade balance of countries importing chemical fertilizers. Eco-sanitation and organic farming are interlinked with each other as the former is crucial in closing the loop between the nutrients and agriculture or aquaculture A remarkable natural balance exists between quantity of nutrients excreted by one person in a year and that required to produce their food (7.5 kg nitrate, phosphorus and potassium to produce 250 kg of grain). This formed the foundation of the concept of the wastes into wealth or zero waste. On the contrary, use of energy intensive and expensive chemical fertilizers using nonrenewable mineral resources, cause environmental pollution and mineral resource depletion. Though recycling of human wastes has been an age old practice in many Asian countries, it has now gained a new momentum in a more scientific and justified way in many countries of the world. Human urine is being used for the cultivation of high N demand vegetables such as cabbage, barley, cucumber, tomato, banana, papaya, spinach, ash gold, French bean, pole bean, pumpkin, green amaranth, and many others. Trials conducted in Finland have fairly proved the production efficacy of cabbage, and less insect damage in urine treatment compared to chemical fertilizer. Our long term studies with fresh and stored urine have amply evidenced that stored urine was highly cost effective and safe fertilizer for the production of microalgae,zooplankton and different species of fish in polyculture. For safe use and reducing the health risk of excreta in agriculture, World Health Organization has suggested a flexible multi-barrier approach comprising a series of measures from 'toilet to table'. Barriers include: storage, crop restrictions, withholding periods and reduced contact, correct handling and cooking of the food crop.

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