Use of Urine in Agriculture

The nutrient in soil is taken up by plants to make their own food and also food for other organisms including human through a process known as photosynthesis. This is how plants and vegetables that we consumed are produced. However, to sustain and to continue of these processes, the amount of nutrients taken up by plants should be returned back to the nature. The experienced farmers thus have been managing waste for returning these nutrients to the soil. Farmers have been collecting cow dung and mixing them with twigs and fallen leaves. However, the use of human urine and faeces are rarely adopted by the farmers though the nutrient contents in these are higher than that in the other sources.

With application of urine/human compost as fertilizers, food security can be increased since these are natural and available free for all, regardless of the economic conditions.

Human urine contains nitrogen, phosphorus and potassium in the ratio of 0.9:0.12:0.26. Similarly, human faeces contains these elements in the ratio of 0.13:0.39:0.74. The ratio of these nutrients in urine and faeces depends on the age of the people, health situation and food consumption pattern of an individual. An adult person, in a year produces 550 L of urine in an average that is equivalent to 4 kgs Nitrogen, 400 g Phosphorus and 1 kg Potassium. These nutrients in urine are in ionic form and hence are readily available to the plants. It is also estimated that with urine collection of a person throughout the year, it is enough to fertilize 1 Ropani (500 m²) of land and the production from 1 Ropani is enough for one person.

A normal human defecates 55 kgs in a year that is equivalent to 130 g Nitrogen, 398 g Phosphorus and 407 g Potassium. Besides these nutrients, faeces also contains organic matter that gives life to the soil. Like chemical fertilizers, the nutrient content in urine is directly taken up by the plants, whereas those in the faeces are taken up slowly. Before using the faeces, complete decomposition should be ensured.
Globally, many researches have been conducted (as in Africa, Europe, America and Asia) on crops like lettuce, spinach, tomato, sorghum, wheat, maize, banana etc. with the use of urine as a fertilizer. Similarly, a study on application of urine in agriculture was conducted by ENPHO (Environment and Public Health Organization) since 2004 with support from WaterAid Nepal and Central Horticulture Centre, Government of Nepal. The study was conducted in:

- Gundu, Bhaktapur (at the farmer’s practice level)
- Central Horticulture Centre (in a controlled environment)

The 8 years study has clearly indicated that, “urine applied in combination with organic compost was found to be the best additive to the soil for better yield and quality”. The combination of urine (which is a well-balanced nitrogen rich fertilizer) and organic compost (which increases microbial activity and hence facilitates the uptake of nutrients by plants) gave the best yields of crops in the conducted study.

 Always smiling Gopal Ba never gets tired of telling tales of his success to preach about urine application to farmers and give EcoSan a title of “GOLD MINE”

Gopal Maharjan, Farmer, Khokana VDC, Lalitpur

“People are ready to pay much more to buy my products. And my vegetables sell the fastest in my local market”

Jeevan Maharjan, Organic Farmer, Siddhipur VDC, Lalitpur

“EcoSan toilet has noticeably reduced the contamination of my dug well. Before I started using EcoSan toilet, the water in the well was not as clean as it is now.”

Bhim Bahadur Maharjan, Farmer, Khokana VDC, Lalitpur