

## Evaluation of Feasibility of Ecological Sanitation in Central Nepal

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**Abstract :** Introduction: In the world, almost half of the population are lacking proper access to improved sanitation services. In Nepal, large number of people are living without access to any sanitation facility. Ecological sanitation toilet which is defined as water conserving and nutrient recycling system for use of human urine and excreta in agriculture would count a lot to utilize locally available resources, to regenerate soil fertility, to save national currency and to achieve the goal of elimination open defecation in country like Nepal. The objectives of the research were to test the efficacy of human urine for improving crop performance and to evaluate the feasibility of ecological sanitation in rural area of Central Nepal. Materials and Methods: The field investigation was carried out at Palung Village Development Committee (VDC) of Makawanpur District, Nepal from March - August, 2016. Five eco-san toilets in two villages (Angare and Bhot Khoriya) were constructed and questionnaire survey was carried out. During the questionnaire survey, respondents were asked about socio-economic parameters, farming practices, awareness of ecological sanitation and fertilizer value of human urine and excreta in agriculture. In prior to a field experiment, soil was sampled for analysis of basic characteristics. In the field experiment, cauliflower was cultivated for a month in the two sites to compare the fertilizer value of urine with chemical fertilizer and no fertilizer with three replications. The harvested plant samples were analyzed to understand the nutrient content in plant with different treatments. Results and Discussion: Eighty three percent respondents were engaged in agriculture growing mainly vegetables, which may raise the feasibility of ecological sanitation. In the study area, water deficiencies in dry season, high demand of chemical fertilizer, lack of sanitation awareness were found to be solved. The soil at Angare has sandier texture and lower nitrogen content compared to that in Bhot Khoriya. While the field experiment in Angare showed that the aboveground biomass of cauliflower in the urine fertilized plot were similar with that in the chemically fertilized plot and higher than those in the non-fertilized plots, no significant difference among the treatments were found in Bhot Khoriya. The more distinctive response of crop growth to the three treatments in the former might be attributed to the poorer soil productivity, which in turn could be caused by the poorer inherent soil fertility and the poorer past management by the farmer in Angare. Thus, use of urine as fertilizer could help poor farmers with low quality soil. The significantly different content of nitrogen and potassium in the plant samples among three treatments in Bhot Khoriya would require further investigation. When urine is utilized as a fertilizer, the productivity could be increased and the money to buy chemical fertilizer would be utilized in other livelihood activities. Ecological sanitation is feasible in the area with similar socio-economic parameter.

**Keywords :** cauliflower, chemical fertilizer, ecological sanitation, Nepal, urine

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