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<b>Title</b>	<b>An assessment of the effect of Human excreta on maize production and water productivity</b>
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### **An assessment of the effect of sanitized human excreta on soil fertility, maize production and water productivity**

The key challenge facing many catchment authorities in Zimbabwe is the challenge of feeding the growing populations within the catchment areas. Modern agricultural practices continue to mine valuable crop nutrients through increased food production to satisfy ever-increasing food demand. Food is being produced from one part of the country and transported into urban areas in many developing countries as virtual water trade. Very little is being done to replenish the fertility of the soils from where the food is produced. In recent diagnostic survey of smallholder agricultural sector in the Manyame catchments of Zimbabwe it was revealed that exhausted soils depleted of their natural mineral and organic constituents by many years of cropping with little fertilization or manuring were the major factors contributing to low yields and poor food security in this sector in Zimbabwe. The poor families in the catchment areas smallholder sector are generally those that do not own sufficient livestock numbers to carry out timely tillage, plant early and achieve high crop yields. This means that these poor farmers have no access or little access to animal manure. Over a number of years they have invariably mined their lands of the little minerals and organic matter originally found in the granite derived sands found in communal areas of Zimbabwe (Mashingaidze and Tongoona, 1999). The objective of the study was to assess community attitudes and beliefs on ecological sanitation and the effect of using sanitized human excreta on soil fertility and water productivity in maize production.

The study aimed to provide alternative crop nutrients through the use of treated human excreta as fertilizer and manure for crop production. The guiding assumption was that Urine diversion toilets will produce compost human manure and urine safe and easily accessible for agricultural use. The study was carried out in the Manyame Catchment specifically in Chiota communal lands ward 14 Marondera district. The study involved six volunteer farmers with four 10 m x 10 m trial plots each with the following treatments the control commercial fertilizer treatment urine only plot and the faecal matter and urine plot. Equal amounts of water was applied through rainfall and a small amount of supplementary irrigation was applied to plots in the fields of three of the farmers during a mid-season drought. Growth monitoring was done at four weeks interval. Harvest determination was carried by weighing the yield from each of the treatment plots and comparisons done. Water productivity was computed by calculating the amount of water used to produce a tone of maize per hectare.

The study revealed that there was generally a positive perception and willingness among community members to use human excreta as manure and fertilizer in maize production It has also been shown that human excreta improves maize crop production and water productivity in rain-fed agriculture. Given the foregoing the study came up with the

conclusions that reuse of human excreta is general accepted within the study area. Human excreta improves maize production and water productivity. The study recommends that the ecological sanitation concept and the reuse of human excreta both humanure and ecofert urine be considered as alternatives excreta management options in catchment areas.