Urine-separating toilet in popularising ecological sanitation in the peri-urban areas of Manipur, India

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Abstract

To popularise the beneficial aspects of the fertilizing utility of human urine to the general public of Manipur state and also to make a step toward checking the deteriorating environment of Imphal city by protection of water bodies, a urine-separating toilet has been introduced and demonstrated at Kangla a locality of Imphal city. The harvest of potatoes and chilies when urine is used as fertilizer are very good and comparable to the harvest which are fertilized with chemical fertilizer.

Urine-separating toilet at large may be adopted by the general public of Manipur state with awareness programme through print and electronic media and active involvement of NGOs.

Introduction

Manipur is the north-easternmost state of India adjoining with Myanmar. It is a hilly state whereas the central part consisting 10% of the total area of 22,327 sq. km. is the Imphal valley where 70% of the state's population of two million plus are inhabited. Traditionally by and large Meitei the people of the valley are orthodox. They consider human excreta as untouchable in any form whether dry or wet; raw or composted. Even in recent times one should necessarily take bath after toilet.

The two main rivers viz, Imphal and Iril flowing through the capital city Imphal are the main source of water for half the inhabitants of the city. The two rivers and river Nambul also act as open drains to which all the used water of the city are merged. The polluted river water ultimately join the Loktak lake to the southwestern side of the valley. Loktak lake is the biggest fresh-water lake in the north-eastern India. The socio-cultural civilization of the valley of Manipur has been flourished around this lake in its pristine time. But because of unchecked end-point disposal of all human activities including heavy loading of nutrients to the lake, the quality of the lake and its surrounding area has been deteriorating. Eutrophication is going on in the lake resulting in excess growth of aquatic weeds and floating mass of vegetation.

Even though the people of Imphal look neat and clean the traditional method of disposal of human excreta has not been so hygienic. Septic tank without soak-pit and pit latrine are the usual disposal system of human excreta. In the periphery most of the latrines are open-pit type. Sewage from the septic tank without soak-pit are directly discharged to the open drains which again flows mainly to any of the three rivers. But with the recent introduction of training programmes for capacity and capability building to the users in the sector of water and sanitation conducted by Human Resource Development Cell, sanitary latrine like two-pit pour-flushed latrines are becoming popular in the peri-urban areas of Manipur. People started taking interest in disposal of human excreta in a safer way.

The concept of urine-separating toilet (Ecological Sanitation–ECOSAN) was introduced by the author to groups of knowledgeable persons of Imphal city sometimes in the month of October, November 2001. One of the group started a pilot project on urine-separating toilet at a place known as Kangla about 10 km northeast of Imphal. A liberal minded family has been selected to adopt urine-separating toilet. In the household of 7 member family, three members the husband, wife and daughter were fully convinced about the benefits of ECOSAN specially the fertilizing utility of urine.

Methods

The three member team of the household started collecting urine by squating on a tray kept in the toilet specially in the evening time. The urine was immediately transferred into a 5-litre plastic jerkin. The jerkin was kept closed and stored for a minimum of 10 days without dilution. 2.5 to 3 litres of urine can be collected in a day. All the collected urine were stored to be used as fertilizer later.

150 potatoes plants of JYOTI variety were planted on an ordinarily prepared bed during the first week of November, 2001. When the plants were of about 15 cm height and four leaves were sprouted from the stem, soils were scooped by THANGJOU (local contrivance) about 5 cm away from each plant and 200 ml stored urine without dilution was administered in the depressed area near the stem. After urine was poured the soils were made again flat as before. During the same time another bed with sprinkled DPA (Diammonium phosphate) was also prepared for planting another 150 potato plants of the same variety. Urea and potash were used as fertilizer on these plants at the same time when urine was put on the other bed.

Figure : Administering store-urine to the potato plants

Again in the first week of Jan, 2002, 200 plants of Chillies of "MEITEI MOROK ASHAANGBI" variety were planted on an ordinarily prepared bed. When the plants were about 25 cm high 150 to 200 ml stored urine without dilution was administered in the same manner as in the case of potato plants. Chillies are usually planted without any additional fertilizer otherwise the stems are bent and most of the plants are spoiled. As the stems of the urine fertilized chilli plants are growing faster spikes are provided to support the bending stems. During the same time another 200 plants of the same variety were planted on another ordinarily prepared bed without any fertilizer.

Results

During the third and fourth week of Feb, 2002 the potatoes were harvested. It has been found that the urine-fertilized-plants have 10 days longer time with green leaves before the leaves were wilted than the ordinarily fertilized-plant with DPA, urea and potash.

In case of chillies also the urine fertilized-plants have10-15 days longer time with green leaves. Harvesting started from the first week of July to the middle of August. Results of the harvest of both potatoes and chillies are summarised in the following table.

Crops	Variety	One time undiluted store-urine dose on each plant	Harvest
Potato	Jyoti	200 ml	Very good, produce are as good as that of fertilized plants with DPA, urea and potash
Chillli	Meitei Morok Ashaangbi	150 – 200 ml	20% more than the ordinarily planted chillies without fertilizer

Table : Result of the harvest of potatoes and chillies fertilized with store–urine

Conclusions

No one in the neighbourhood was informed about the urine fertilization on the potato and chilli plants and no complaint of anything sort including smell had come up from the neighbourhood. Even the older members of the same family were not informed less they might object because of religious believes and other orthodox views. In the Meitei society the first harvest of any plant is offered to the Almighty God and it is unthinkable for an orthodox Hindu Meitei to offer urine-fertilized potatoes or chillies to the Almighty. Nevertheless the harvest of both potatoes and chillies were very good without any extra cost and the family members were very happy. One toilet model with separate arrangement for urine collection tray has alreadily been started functioning in the same locality after the successful story.

Awareness programmes with practical demonstration to show the beneficial aspects are essential to take-up ECOSAN activities in the area. Government efforts like advertisement in the radio, T.V. and newspaper are important steps to overcome the orthodox believes of the society. Active involvement of NGOs working in the field of water supply and sanitation is also necessary for widespread popularisation of ECOSAN in Manipur.

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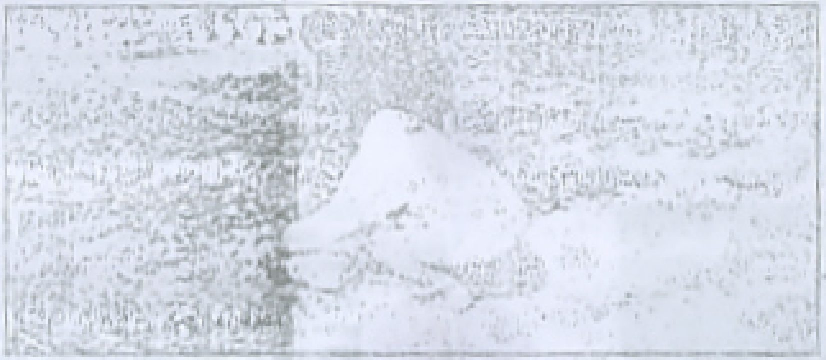
মণিপুরদা ইকোলোজীকেল সেনিতেসন (ইকোসান) হৌগৎপা

আকুমার দিলিপ সিংহ

ওইবগী মশাকনি থোক্লকপা হুরি ঈশিংদু [illegible] ফমলা কেমিকেলশিংদি শাইগী ফাং ওইবা শীজিন্নবনা লৈবক-পু কনশিল্লি। [illegible] গ্রিক ফমখা য়াওরে। [illegible] তুপশিংগুমা [illegible] অদুগী থোকখি হৌ নাইট্রোজেন (এন) য়াম ১১, ফস্ফরস (পি) য়াম ১ অমসুং পোতাসিয়ম য়াম ২.৫ য়াওবা [illegible] হায় (যুরিয়া) কৌবশিং অসি [illegible] মওংদা য়াওবা নাইট্রোজেন অসি মুহিরদবী [illegible] অমসুং [illegible] (এসিডিটি) চাং য়াওবা PH ৭ [illegible] মুহিক অসি [illegible] [illegible] অমসুং [illegible] (alkalinity) চাং থোকপা PH [illegible] মুহিং [illegible] য়ুরী ঈশিংগী মহীক খরা য়াওরে থোকলকই নিংই।

[illegible] শরুকশী য়াওবা ঈশিংগী মতম লম্বাক্সুরশী মনা-মশীং [illegible] [illegible] অসিনা য়াওরিবা মতমশিং [illegible] হুরী ঈশিংগী ৯০% য়াওবা অমুক য়াওরবগী [illegible] থোকখি। য়াওরিবা মহিশিং অসি মমাংগী [illegible] নাওশিংবা অমসুং [illegible] য়াওবা [illegible] হুরী ঈশিংগী [illegible] [illegible] [illegible] [illegible] শীজিন্নবদগী থোকখি। [illegible] হুরী ঈশিং [illegible] শিং (NPK) অসি [illegible] [illegible] (এম জি এ) গী [illegible] থোকহল্লি। ইকোসান (ইকোলোজীকেল সেনিতেসন) না মতাংদু [illegible] [illegible] লৈবা অদুগা হুরী ঈশিংদু [illegible] তুপশিংগুমা [illegible] শীজিন্নবগী [illegible] [illegible] [illegible] অমসুং [illegible] হুরী ঈশিংগী য়াওবা মহিশিংদু শাগীগী [illegible] ওইনা শীজিন্নবা [illegible] [illegible] [illegible] চাইনা, মেক্সিকো, [illegible] [illegible] [illegible] থোকখি।

মতাংদা হুরী ঈশিং শীজিন্নবা [illegible] [illegible] মনিপুরদসু [illegible] হৌরি। হুরী ঈশিংদু [illegible] [illegible] ওইনা শীজিন্নবা [illegible] ঈশিং [illegible] ইকো-[illegible] [illegible] [illegible] লৈবাক [illegible]।



হুরী ঈশিংদা য়াওরবা শাওনা অমসুং [illegible]

ইম্ফালগী [illegible] [illegible] ৮ মুক [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] ওইনা শীজিন্নবা [illegible] ইকোসান [illegible]।

[illegible] ২০০১ [illegible] [illegible] [illegible] [illegible] হুরী ঈশিং [illegible] [illegible] ৫ [illegible] [illegible] [illegible] [illegible] তুপশিংগুমা [illegible] ওইনা [illegible]-[illegible] [illegible]। [illegible]) লৈতেংদা [illegible] [illegible] [illegible] লৈতেংদা অমসুং DAP [illegible] [illegible]। [illegible] অসিনা ইকি ৬/৭ মুক [illegible] [illegible] DAP [illegible] [illegible] [illegible] [illegible]। [illegible] [illegible] ইকি ২ মুক [illegible] [illegible] [illegible] লৈবাক [illegible] [illegible] [illegible] তুপশিংগুমা [illegible] হুরী ঈশিং [illegible] ১৫০ [illegible] ২০০ মুক [illegible] লৈতেংদা লৈবাকশিং [illegible] [illegible] [illegible] [illegible] [illegible]।

[illegible] ১০ নি তুপশিংগুমা [illegible] [illegible] [illegible] ২৩ [illegible] [illegible] লৈবাক অদু [illegible] [illegible] [illegible] লৈতেন [illegible]।

[illegible] ২০০২ গী [illegible] [illegible] লৈতেংদা [illegible] [illegible] হুরী ঈশিংদা য়াওরবা লৈতেংদা [illegible] [illegible]। [illegible] অসিনা ইকি ৯/১০ মুক [illegible] [illegible] [illegible] ইকি ২ মুক

২০০২ গী ফেব্রুৱারী [illegible] [illegible] থোকপা [illegible] হুরী ঈশিংদা য়াওরবা হাপথিবা লৈতেংশিংগী [illegible] ৭/৮ নি [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]।

২০০২ গী জুলাই/আগষ্ট [illegible] [illegible] [illegible] হুরী ঈশিংদা য়াওরবা হাপথিবা [illegible] মুহিং ১০/১২ [illegible] [illegible] [illegible] [illegible] হুরী ঈশিংদা য়াওরবা [illegible] ২০% [illegible] [illegible]। হুরী ঈশিংদা [illegible] ওইনা শীজিন্নবা [illegible] [illegible] [illegible] [illegible] [illegible]। [illegible] লৈতেং [illegible] হুরী ঈশিংদা য়াওরবা শীজিন্নবা [illegible]-[illegible]।

হুরী ঈশিংদা য়াওরবা [illegible] [illegible] শীজিন্নবগী [illegible] [illegible]। [illegible] [illegible] অমুক শীজিন্নবা য়াই। [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]। [illegible] [illegible] [illegible] [illegible] [illegible]। [illegible] [illegible] লৈবাক [illegible] [illegible] [illegible] [illegible] তুপশিংগুমা হুরী ঈশিং [illegible] অমুক লৈবাকশিং অসি শীজিন্নখিবনি।

[illegible] [illegible] [illegible] হুরী ঈশিং [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]। [illegible] [illegible] ২ [illegible] ৩ [illegible] [illegible] তুপশিংগুমা [illegible] [illegible] [illegible], হুরী ঈশিংদা [illegible] [illegible] অসিনা য়াওরবা [illegible] শীজিন্নবা [illegible] [illegible]। [illegible] [illegible] ইকোসানগী [illegible] [illegible] [illegible] [illegible] [illegible], [illegible] লৈবাকশিংদা [illegible]। ২০০৩ গী [illegible] [illegible] জর্মনীগী Lubeck [illegible] [illegible] [illegible] ওইনা ইন্টরনেস্নেল সিম্পোজিয়ম [illegible] ইকোলোজীকেল সেনিতেসন [illegible]।

[illegible] [illegible] [illegible] [illegible] মনা-মশীং [illegible] [illegible] হুরী ঈশিংদা য়াওরবা [illegible] মনা-মশীং [illegible] [illegible] য়াই। [illegible] [illegible] [illegible] [illegible] [illegible] মনা-মশীং [illegible] ইকোসানগী [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]।