

Manure Work

In the farming system, soil fertility is fundamental to the productivity and sustainability of farming. Preparation of organic manure is not a new concept as farmers have been practicing this in the past in Bhutan. Raising cattle has been part of a farmer's life in Bhutan for a number of reasons. They are the source of dairy products and also meat, they provide power for tilling the land, and they provide organic fertilizer in the form of manure. Compost manure is considered best for the farms. Such manure is called *khi* (ཁྲི) in Tshangla language and *lui* (ལུའི) in Dzongkha.

Relatives and neighbor organize the activities in turn so that a member from each household contributes labor to carry manure. The manure is considered filthy as they are made of mixture of dry leaves and dung of cows or pigs. Carrying them to the farms needs energy.



Villagers collect dry oak leaves in the winter season

People collect dry oak and pine leaves from the forest and withered meadow ferns from open areas. The leaves are collected in the winter season when deciduous trees have shed their foliage. The leaves are carried in baskets. Generally, the women take turns to help each other, which makes it possible for them to go in groups to do the job. It is common practice within villages and communities for people to contribute to each other's manure work on the basis of reciprocity.



Bhutanese farmers carrying manure to the field for fertilizing soil

The dry leaves are spread out in the cowshed layer after layer for many days. As the cattle are kept in the sheds at night, the plant products and cattle dropping gets mixed together over the course of time. The leaves also form a nice floor for the animals to sleep. The decomposed leaves are then taken out and piled in heaps in the field. The decomposed leaves are scattered all over the field to help the soil regain its nutrients. Sometimes heaps of manure, branches and clods are burnt to create ash, which is also scattered in the field.

The farmers make animal manure through either tethering animals in field after the crop harvest or in the animals shed as mentioned before. When cattle are fed in sheds, as in the case of sedentary grazing, dung collected from the sheds is mixed with fallen leaves collected in nearby forests and made to decay for some time. However, in region where people depend greatly on livestock farming and the size of each herd of cattle is quite large, farmers generally maintain the practice of migratory livestock farming all year round. The migratory cattle are normally kept in the grazing lands far from the farmland and they are not used for making manure.

The Bhutanese farmers have an in-depth knowledge about soil management using local resources and techniques. Today the use of chemical fertilizers has increased substantially as a part of socio-economic development. Many farmers increasingly rely on the chemical fertilizers.

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