

## Use of bamboo charcoal to remove the bad smell of manure

**C**ATTLE sheds generally have a bad smell from animal wastes. This bad odor is difficult to remove. Bamboo charcoal can be used to improve the smell of cattle sheds.

### Preparing the bamboo charcoal

Bamboo is cut into small pieces and put into a tightly sealed container made of pottery or iron. This is then placed on a hot fire for at least an hour.

Once the fire is out, the container should be left to cool down completely before it is opened. If it is opened while it is still hot, the charcoal might be burnt to ashes. The bamboo charcoal should then be pounded into a fine powder.

### Feeding the charcoal powder to cattle

The bamboo charcoal powder may be fed to cattle as a feed additive, at a rate of 1 - 2% (by volume) (see Table 1). Alternatively, it may be added to the drinking water, as shown in Table 2. Used in this way, it will reduce the bad smell of manure by 50%.

### Health benefits of charcoal

A small amount of charcoal added to feed also has health benefits for the animals. In the case of cattle, it increases milk production and helps prevent mastitis. In the case of pigs and laying hens, it reduces mortality. In the case of pigs, it also reduces the offensive smell of pig wastes, and improves the feed:weight gain ratio.

Table 1. The rate and usefulness of bamboo charcoal added to the feed

Livestock	Amount added to feed mix	Usefulness
Cow	1 - 2%	<ul style="list-style-type: none"> <li>- Prevention of mastitis</li> <li>- Increased milk production and reduction of somatic cells in the milk</li> <li>- Prevention of calculus occurrence</li> <li>- Prevention of stomach twist</li> </ul>
Fattening cattle	1 - 1.5%	<ul style="list-style-type: none"> <li>- Improved meat quality</li> </ul>
Pig	1 - 1.5%	<ul style="list-style-type: none"> <li>- Reduction in mortality</li> <li>- Reduction in bad smell and fly occurrence</li> <li>- Better feed conversion and less left-over feed</li> </ul>
Broiler chicken	1 - 1.5%	<ul style="list-style-type: none"> <li>- Increased laying rate, longer laying period</li> <li>- Increased egg weight</li> </ul>
Layer chicken	1%	<ul style="list-style-type: none"> <li>- Higher survival rate over 4-day shipping period</li> <li>- General reduction in mortality</li> </ul>

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Fig. 1. Bamboo charcoal added to the feed or drinking water improves the smell of the shed and helps keep down flies

Table 2. The rate and effect of bamboo charcoal extract added to drinking water

Use	Rate of dilution	Effect
Drinking water for healthy livestock	1,000 times	Prevention of disease Reduction of bad smell
Drinking water for sick livestock	100 times	Prevention of disease
Disinfection of cattle shed	100 times	Removal of bad smell Optimum sanitation

## Other methods of using charcoal

As well as being fed directly to the cattle, bamboo charcoal can be used in other ways to improve the sanitation of a livestock shed. The bamboo charcoal can be diluted with water 10 - 20 times and sprayed around the shed at a rate of 1 liter per 100 square meters, or the charcoal pieces may be hung up around walls in small packets made of netting.

Another method is to treat a septic tank used for sewage, using the bamboo charcoal extract at a rate of 1 liter per 1 m<sup>3</sup> (1000:1). In this case, half a liter of charcoal extract per cubic meter of tank (2000:1) should then be added regularly every 10 days.

## Precautions

- ❑ In making the charcoal, be sure to let the container cool down completely before you open it.
- ❑ When the powdered charcoal is mixed with water, the container used for the charcoal extract must be able to withstand acidity.
- ❑ Make sure the fire is hot enough for long enough to make the charcoal.
- ❑ In the case of dairy cattle, bamboo charcoal powder should be supplied at a low concentration (0.8%) at the initial feeding stage, and increased to 1 - 2% later on.