Maize silage has several advantages in feeding dairy cows:

1. High yield of forage per acre.
2. High energy feed forage to meet the requirement of milking cows.
3. An efficient way to store high quality feed for feeding during the dry season.

The disadvantages are:

1. Requires very careful preservation to give a good product.
2. Added cost of plastic and molasses for storage.
3. Must be able to chop relatively large volumes at one time.

When to consider growing and feeding maize silage:

1. When you have availability of good quantities of manure or fertilizer
2. If you have or can rent a plot to plant maize.
3. If cattle are low in body condition.
4. If you would like to reduce the cost of purchased dairy meal or other supplemental grains that are providing energy (not protein feeds)
5. If you want to maximize the ‘forage yield per acre’ or ‘milk yield per acre’ of arable land

Maize silage is high in energy, moderate in protein and low in minerals such as calcium, phosphorus and magnesium, relative to other forages such as Napier or Lucerne. All of these things should be taken into account when feeding maize silage to dairy cows. Typical good maize silage, with lots of kernels, is 8% protein, 70% TDN (energy) and Calcium and Phosphorus of 0.2%, on a dry matter basis.

The high energy of maize silage will help meet the increased demands of a lactating dairy cow for energy to produce milk. The high starch content of the maize silage will help prevent energy shortages in the cow after calving.

**How much maize silage should you feed?**

If you are going to do an accurate job of feeding your cow, then you should have an estimate of the cow’s weight. The easiest way to get a cow’s weight is using a weigh tape and the conversion table in this dairy handbook.

1. If you have a limited amount of maize silage, it is best to: a) start feeding a cow 1-2 kg of maize silage during her first week after calving; b) gradually increase amounts fed as her milk production increases (see below for amounts); and c) try to spread the maize silage feeding over the first 200 days after the cow has calved until she has been confirmed...
pregnant again. Plan to feed more maize silage early in the milking period when the cow’s milk production is the highest.

2. With limited maize silage a good plan is to feed 10kg day. This will improve milk production and one bag of silage should last one month.

3. If there is ample silage available, then feed all the milking cow will eat after she has been gradually introduced to the maize silage over a period of a few weeks. Cows will eat up to 2% of their body weight as forage dry matter. Good maize silage is about one-third dry matter, so 2% x 3 is 6% of their body weight each day. For example a 500 kg cow could eat up to 30 kg of wet silage a day. This would occur when the cow is in peak production about 60 days after calving.

The way to feed maize silage is to clean the feed box of unconsumed feed and add new feed several times a day. Maize silage left in the feed box will get moldy and not be eaten, or eaten if there is nothing else to eat – however moldy feed can make cows sick. Feed only what the cow will eat based on how much the cow ate the day before.

What should you feed with maize silage?

1. Maize silage can be fed as the only forage. In Kenya it is usually long-chopped so it should not cause the problems you read about with fine-chopped silage in other countries.

2. Good quality Napier grass or Napier grass silage is an excellent feed to go with maize silage as it adds protein that may be lacking in maize silage.

3. Calliandra leaves or other high protein feeds (see list in chapter 1) also go well with maize silage as these also add protein.

4. If the maize silage is good quality with lots of kernels (high energy), you should feed a high yield dairy meal (20% protein). It is important to balance the energy and protein in the diet. Although the high yield dairy meal costs more, cows fed good quality maize silage can actually be fed 20% less high yield dairy meal than calculated by the formula, saving you money. For example, if 5 kg of dairy meal is calculated to be required, you can feed just 4 kg of 20% dairy meal with the maize silage.

5. Feed a mineral mix that has 2:1 or 3:1 Calcium to phosphorus ratio to milking cows, in amounts according to the level of milk production.

What can you expect when you feed maize silage?

1. Cows giving more milk. Maize silage will supply the necessary energy to produce higher levels of milk.

2. Easier to get cows pregnant again. Cows with adequate energy in their feed will show heat and get in calf earlier than cows that are fed less energy.

3. Cows will maintain their weight while milking well and not get skinny. Cows will give higher volumes of milk longer and will have good weight when they are dried off for the next calf.

What if a cow gets fat when eating only maize silage and dairy meal?

1. If it is soon after calving, less than 200 days, then not enough protein is being fed. See above for good feeds to feed with maize silage.
2. If it is later after calving, more than 200 days, the cow may be receiving more energy than required for her milk production. Then replace some of the silage with good quality Napier grass.

Should you feed maize silage to dry cows or pregnant heifers?

Milking cows not confirmed pregnant yet are the best cattle for maize silage feeding when limited maize silage is available. If you have ample maize silage and at least one other cow eating maize silage, you could feed small amounts of maize silage as part of the “steaming up” process, beginning with 1-2 kg per day starting at three weeks before the cow calves. If you do not have another cow being fed maize silage, the maize silage in the bag will likely get moldy because it is not being fed fast enough with the small amount needed for a “steaming up” cow. You can gradually increase the amount of maize silage fed to 3% of the cow’s body weight when the cow calves. The low calcium in maize silage will not contribute to the cow having “milk fever”. Well-made maize silage contains a lot of kernels and will reduce the amount of dairy meal required for “steaming up” by one-third. For example, cows not on maize silage should be getting 2.5 kg of dairy meal per day, but cows on maize silage only need 1.6 kg of dairy meal per day.

Should I feed maize silage to calves or unbred heifers?

Calves less than 6 months of age should not be fed maize silage because their rumen is not fully developed yet. Unbred heifers could be fed maize silage, but only if they are fed high protein feeds as well – otherwise they will end up with fat in their developing udder that will reduce milk production when they begin milk production.

Photo of long-chopped maize silage in a manger
SUGGESTIONS FOR FEEDING MAIZE SILAGE TO MILKING COWS

Table #1 Limited silage available.

<table>
<thead>
<tr>
<th>Cow size</th>
<th>Small-framed cow (less than 400 kg)</th>
<th>Medium-framed cow. (400-500 kg)</th>
<th>Large-framed cow (500 kg and larger)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited Silage Available</td>
<td>10 kg /day</td>
<td>15 kg/day</td>
<td>20 kg /day</td>
</tr>
<tr>
<td>Supplement with</td>
<td>Good quality napier grass or napier silage</td>
<td>Good quality napier grass or napier silage</td>
<td>Good quality napier grass or napier silage</td>
</tr>
<tr>
<td>Dairy meal</td>
<td>Feed a 16% protein dairy meal according to milk production plus 2:1 Ca:P minerals.</td>
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<td>Feed a 16% protein dairy meal according to milk production plus 2:1 Ca:P minerals.</td>
</tr>
</tbody>
</table>

Table #2 Enough silage to full feed milking cows.

<table>
<thead>
<tr>
<th>Cow size</th>
<th>Small-framed cow (less than 400 kg)</th>
<th>Medium-framed cow. (400 - 500 kg)</th>
<th>Large-framed cow (500 kg and larger)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed to what cows will eat</td>
<td>20 kg /day</td>
<td>25 kg /day</td>
<td>30 kg /day</td>
</tr>
<tr>
<td>Dairy meal</td>
<td>Feed a 20% protein dairy meal according to milk production plus 3:1 Ca:P minerals.</td>
<td>Feed a 20% protein dairy meal according to milk production plus 3:1 Ca:P minerals.</td>
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</tr>
</tbody>
</table>

Note always make changes to cow feed gradually or cows will go “off feed”

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