

Dairy Hub Training Booklets

Titles

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|--|------------------------------|
| 1) Importance of Water | 9) Breeding |
| 2) Fodder | 10) Calf Rearing |
| 3) Wheat Straw Enrichment | 11) Diseases and Health |
| 4) Silage (Fodder Pickle) | 12) Mastitis |
| 5) Hay Making | 13) De - Worming |
| 6) Balanced Ration | 14) Mechanized Dairy Farming |
| 7) Dairy Farming as an Enterprise/Business | 15) Vaccination |
| 8) Heat Stress | |

Silage (Fodder Pickle)

“Appropriate Moisture, Pressing and Airtight Packing Guarantee a Standard Quality of Silage”



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Dairy Hub is a Community Dairy Development Programme, which has been initiated for the development of small farmers. The aim of this programme is to keep farmers informed about modern ways of dairy farming, to provide practical help for improving their skills and to increase production of their animals. This programme will increase not only the average production of animals but also the income of farmers, and thus decrease considerably the rate of poverty in rural areas. This booklet is a part of this programme.



Yours truly,

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Design agency:

Red Communication Arts

Printer:

Vantage Printers

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Need for Fodder:

It is important to feed a balanced and appropriate feed to obtain increased milk from lactating animals. In Pakistan we cannot get the best milk production from animals because of feed shortage. The feed that is fed by our farmers, barely keeps the animals alive. Though shortage of green fodder in peri-urban areas is often supplemented with other ingredients which are comparatively more expensive. However milk production from animals can be profitable only if their feed requirements are met with a reasonable amount of green fodder.



Farmers often use poor quality fodder due to lack of important information about the use of green fodder. It adversely affects not only milk production but also the health of animals. Also its use is becoming more difficult and less profitable due to the rising prices of grains. The farmers' tendency towards growing cash-crops is also causing a shortage of fodder every year. If full attention is given to the feeding of animals, it is estimated that their production can be increased by 40 percent.

What is the Solution?

An immediate solution is that unconventional sources of feed should be sourced, or the farmers should be encouraged to cultivate more productive varieties of fodder. In developed countries, fodder requirements are fulfilled with silage.

What is Silage?

Fodder is packed in airtight condition to preserve its nutritional value, improve its quality and taste and to make it easily digestible. This is called silage or pickle of the fodder.

In this process, green fodder is fermented through special bacteria which can survive without oxygen. The resulting fodder is rendered tasty and easily digestible for animals.

The preparation of good quality silage depends on timely harvesting of fodder, the quantity of air in it at the time of packing and the preservation method. In this process useful bacteria converts soluble starches into lactic acid. It decreases its acidic quality (pH) to 3.0-4.0, which stops the growth of harmful germs and thus makes the fodder safe for animal consumption.





Appropriate Fodder for Silage:

Silage can be made from all winter and summer fodders. But usually maize, oats, Sorghum etc. are considered best for silage making. Normally fodder with broad leaves and thick stems are suitable for silage. Since leguminous fodder has less carbohydrates and protein content, they are usually mixed with non leguminous fodder (like maize and sorghum) to make the best and nutritious silage. Furthermore, if moisture content is high in fodder, wheat straw or crushed cobs of maize can be added for silage making.



The Right Time to Harvest Fodder:

When should fodder be harvested?

The nutritional value of fodder decreases when it is harvested before or after it is mature. Due to this the fodder does not remain easily digestible. The best time to harvest maize is when its grains are 50 percent milky. The best time to harvest the leguminous fodders is when 50 percent flowers are in blossom. Moreover, the best time to harvest green fodder for silage is when its moisture content is 65-70 percent.



Steps for Making Silage:

- Check moisture in fodder
- Harvesting
- Chopping
- Storage

Harvesting:

It is important to determine the right time for harvesting fodder to get the best nutritional value from silage. The time to harvest can be determined from the following indications:

1. When the plant is fully mature.
2. Half of the grain in maize is milky.
3. The fruitful fodder has 50 percent flowers.
4. Moisture content is 65-70 percent.

The Method of Checking Moisture in the Fodder:

The ratio of moisture in fodder is the best when no water seeps out of the stem of the fodder on squeezing it. But it is important to get the crop examined by a dairy expert.

Chopping:

Fodder can be chopped with a common fodder chopper, but an electric chopper or the tractor's shaft can hasten the chopping process, which results in improvement in the quality of silage. Nevertheless chopping can be done with the common scythe too. Modern harvesters are also available for the chopping process. These can be sourced from the Dairy Hub office.



The Size of Chopped Fodder:

$\frac{1}{4}$ th to $\frac{3}{4}$ th inch size of the chopped fodder is considered quite suitable for silage, but a one inch size of 15-20 percent pieces of chopped fodder keeps its fiber ratio to a suitable level. Care should be taken to keep the loss of fodder to the minimum during chopping.

The chopped fodder should be pressed and stored as soon as possible to maintain its nutritional value.



Storage of the Silage:

The chopped fodder can be stored in a pit on a comparatively higher ground. But the best way is to build a bunker to minimize the possibility of the loss of the fodder. Following things should be kept in mind when choosing a storage place:

1. This storage place should be near the animals shed.
2. It should be on a higher ground to protect it from water.
3. There should be no salinity there.

If an exclusive bunker is built for silage, it will reduce the possibility of any loss of fodder. There are 18 to 27 inches thick strong walls on the three sides of the bunker and the concrete floor is made with a gradual slope/ incline.

The whole process of silage making – harvesting, chopping, pressing and packing – should be completed within 16 to 20 hours. Therefore efficient and timely arrangements should be made for hiring of labour and required machinery relevant to the quantity of silage.

Delay in the preparation of the silage triggers harmful fermentation which reduces its nutritional value. The filling and pressing process should be finished in a single day to initiate the process of useful fermentation.

Spread the chopped fodder in 6 to 9 inches thick layers. Steady packing is needed between each layer, which is done with the help of a tractor, which moves on it to pack it tightly. This packing or pressure keeps the temperature at a suitable level. The weight squeezes out air and fermentation begins.

The process of silage making should be completed within 16 hours.



25 to 30 kilogram silage can be stored in one cubic foot. The fodder should be protected from air and rainwater. This can be done by covering it with a strong water proof plastic and placing it on discarded vehicle tires or sandbags on it. Silage is ready for consumption as fodder for the animals in 4-6 weeks.



Precautions when Storing Silage:

1. Chop the fodder in small size.
2. Protect it from dust and do not let dirt stick to the tyres of the tractor during the pressing process.
3. Fill the bunker or the pit quickly.
4. Pack the silage carefully to protect it from air and water.
5. Press the fodder with tractor in 6-9 inch layers.

Advantages of Silage:

- A cheap substitute for fodder at the time of fodder short age.
- Silage makes the fodder more digestible.
- Land is available for the next crop without delay, because all of the fodder is harvested and stored at once.
- Animals get nutritious feed the whole year round.
- Expenditure on labour force is decreased considerably.



Use of the Silage:

The animals like eating silage, but the buffalo may be hesitant in the beginning. In this case, feed it with green fodder or concentrate mixed in the silage, so that it develops a taste for the silage. Then increase its quantity gradually. Provide 3 percent dry matter according to the weight of the animal.

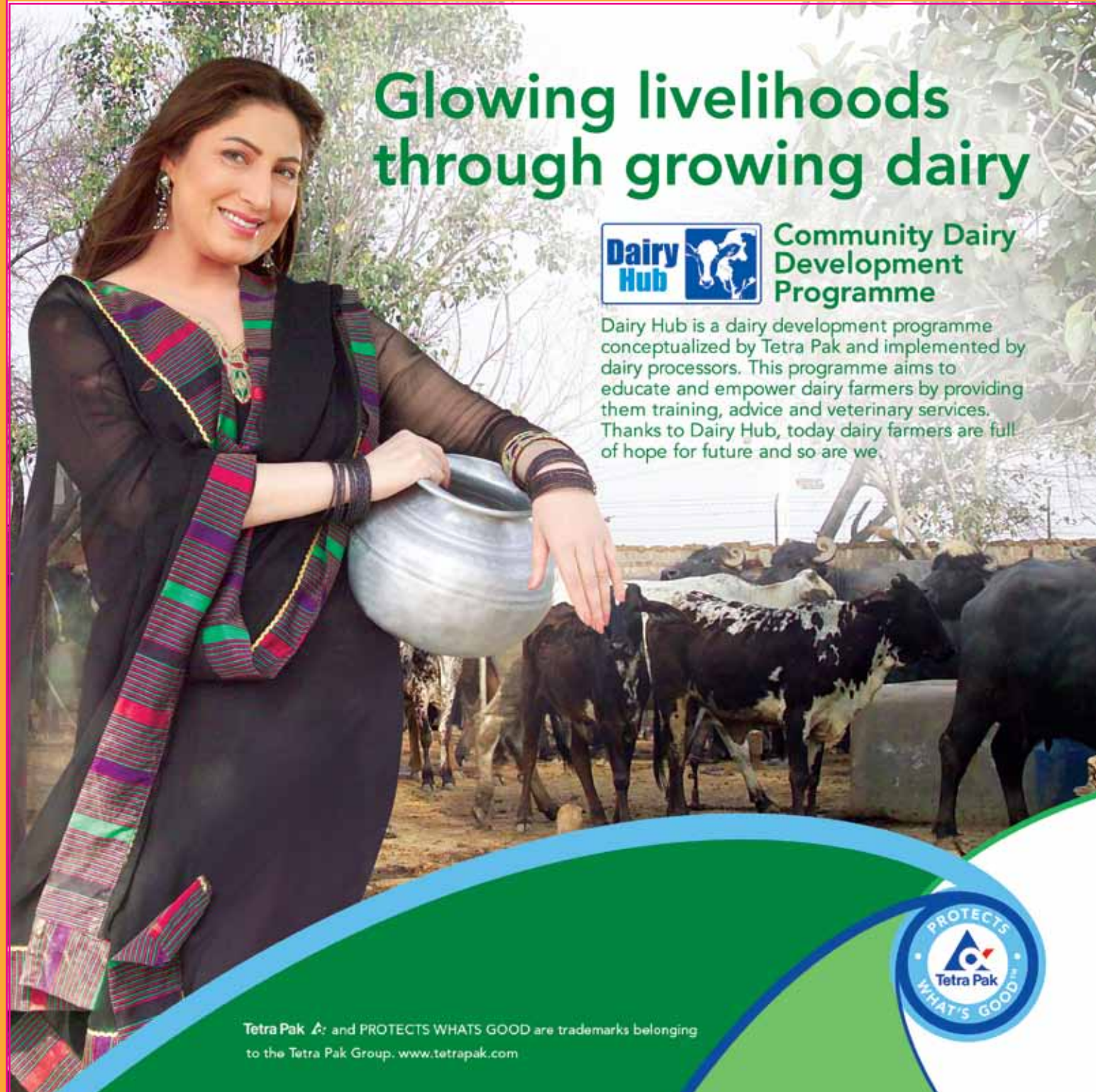
Give 15 to 20 kilogram silage along with concentrates daily to the lactating animals. Be careful when removing silage from the bunker. Cover it with polythene so that mud or moisture does not spoil the silage.

Glowing livelihoods through growing dairy



Community Dairy Development Programme

Dairy Hub is a dairy development programme conceptualized by Tetra Pak and implemented by dairy processors. This programme aims to educate and empower dairy farmers by providing them training, advice and veterinary services. Thanks to Dairy Hub, today dairy farmers are full of hope for future and so are we.



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Dairy Hub is an important step by Tetra Pak towards the well-being of dairy-farmers. It will certainly open new vistas of progress for dairy farmers. I congratulate Tetra Pak on the opening of a new era for the prosperity of dairy farmers. All these training booklets are a part of this developmental programme and they have been written specially for the help and guidance of dairy farmers.

Based on various topics, these training booklets contain important pieces of information and suggestions which will help the farmers in better rearing of their animals, protecting them from different diseases and to increase their milk production.

I do hope that this effort by Tetra Pak will be useful for the prosperity of the farmers and help them solve their problems regarding health of their animals.

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