

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 | |

Balanced Ration

“Balanced Ration... Healthy Animals ...
Better Production ”



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 **Tetra Pak**

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.



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Printer:
Vantage Printers

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God Almighty has blessed Pakistan with the most suitable weather, fertile land and a wealth of animals of all kinds. Although Pakistan is considered one of those countries which have a maximum number of animals, yet we are far behind developed countries in the average yield from our animals.

We have been rearing the animals in a traditional way for many centuries. We have failed to get the best production of meat and milk from them because we have never been able to provide them the best type of feed. Pakistan has unfortunately not made so much progress in dairy farming as it has made in agriculture. The main cause of our failure is the fact that we provide animals only fodder, which does not fulfill their nutritional requirements.

It is very important that we give them a balanced feed to get more milk from them, to rear them well and to make our farms more profitable.

What Feed should be given to Animals?

The farmer must know everything about the nutritive value of seasonal fodders to make and provide a balanced diet to the animals.

1. Fodders of the Summer Season:

Fodder Name	Production (ton per acre)	Dry Fodder (percent)	Protein (percent)
Maize	20-18	29.30	7.04
Evergreen	60-50	27.59	6.98
Matt grass	90-70	16.54	7.52
Millet	22-20	29.50	6.08
Sorghum	25-20	30.00	6.20
Guar	18-15	20.90	17.35

2. Fodders of the Winter Season:

Fodder Name	Production (ton per acre)	Dry Fodder (percent)	Protein (percent)
Raie grass	40-30	14.21	22.85
Barseem	35-30	15.62	19.90
Alfalfa	60-50	24.26	22.83
Oats	35-25	22.10	9.98

3. Fodders:

Fodder Name	Production (ton per acre)	Dry Fodder (percent)	Protein (percent)
Wheat straw	-	29.75	2.59
Sorghum stems	-	85.50	3.74
Maize stems	-	82.50	5.45
Maize cobs	-	90.50	1.66
Millet stems	-	85.00	4.00
Rice straw	-	92.82	3.06
Barseem (dry)	-	85.60	18.46
Alfalfa (dry)	-	87.50	18.86



Daily Feed for Animals:

Fodder:

Fodder should be given at 10% of the bodyweight of the animal daily. In our country, this fodder is equal to 40 to 60 kgs daily. But the weight of the fodder must be according to its nutritious value too.

Ration/Concentrates:

We can feed ration/concentrates equal to one-half or one-third of the production of milk to the animals. The quantity of concentrates to be fed depends on the production of milk as well as fat percentage of milk. This quantity should be a bit more in summer because summer fodders have low protein percentage.

Water:

Ideally animals should be untied and have free access to water. However, tied animals should always be given fresh drinkable water at least 3-4 times in winter and 6-7 times in summer and there should not be any restrictions on their movement. They must be given water soon after they are milked.



Minerals:

There should be 2% mineral mixture in fodder given to animals.

What is Ration/Concentrates?

This is the feed in which there is less fiber but it is an important source of energy for the animals.

Characteristics of Ration or Concentrates:

Lactating animals need 16-18% proteins. Balanced Ration has proteins, energy, minerals, vitamins and fibers according to the nutritional requirements of animals.

The Concentrates of good quality are always tasty and animals love to eat it. In the beginning animals usually do not eat it because of the presence of ingredients of sunflower and maize gluten in it. These ingredients should not be more than 20-25% in the feed. But it is nevertheless important that they should be mixed in Concentrates making it tasty, yet inexpensive.

These ingredients should be bought and stored when they are cheaper in the market.

Important ingredients of Ration or Concentrates:

Sources of Vitamins	Sources of Minerals	Sources of Energy	Sources of Proteins
Vitamin A	Salt	Wheat bran	Banola cake
Vitamin D	Bones powder	Maize bran	Mustard cake
Vitamin E	DCP	Rice bran	Banola meal
	Mineral mixture	Rice polish	Mustard meal
		Wheat	Sunflower cake
		Maize	Sunflower meal
		Sorghum	Maize cake
		Millet	Maize gluten
		Molasses and oil	Urea, etc.

Common ingredients to be used for the preparation of balanced Ration and their nutritional profile:

Ingredients	Proteins (percent)	TDN (percent)	Price (per kilogram)
Cottonseed cake	23.04	63.4	18.00
Repseed cake	37.10	79.8	16.00
Sunflower cake	30.47	69.8	16.00
Soyabean meal	44.48	84.0	35.00
Maizegluton feed 20%	21.85	79.1	10.25
Maizegluton feed 30%	30.70	83.6	14.00
Rice polishing	12.36	89.9	12.00
Wheat bran	14.99	71.0	14.00
Wheat grains	12.80	78.9	22.00
Maize grains	9.80	81.2	18.00

Sorghum	15.75	78.5	16.00
Milletts	10.55	77.2	18.00
Oats	10.21	77.2	15.00
Oil	00.00	195.0	150.00
Black gram	20.35	75.2	20.00
Urea	287.50	-	12.00
DCP	20.02	57.7	28.00

What should be the quantity of ingredients in Concentrates or Ration?

Given in the table below is the quantity of the ingredients to be used in balanced Rations and the reasons why they are used:

Name of Ingredient	The maximum safe quantity (percent)	Reasons
Cotton seed cake	20-25	Price and quality; taste; eaten in low quantity; proteins and price
Rapeseed cake	10-13	Protein level; milk does not taste good
Sunflower cake	10-13	Quality and taste
Cotton seed meal	15-20	Price, protein
Rapeseed meal	15-20	Price and the quality of the protein
Canola meal	15-20	Not much poisonous; less production
Peanut meal	20-25	Bad taste
Maize carbohydrate 20 and 30%	20-25	Increases urination
Maize carbohydrate 60%	5-10	Diarrhea
Soyabean	10-15	Price
Urea	1-2	Less quantity of calcium

Rice polishing	20	High price; not very digestible
Wheat bran	25	According to requirement
Molasses	10-15	
Wheat grains	15-20	
Maize grains	40-50	
Sorghum	15-20	
Oil	2-3	
Salt	1-2	
DCP	1-2	
Salt powder	2	

Calf Starter:

Calf Starter is the feed that we start giving the calf when it is one-week old. It should be given one kg feed daily from the age of 4 to 8 weeks. This preliminary feed not only enhances rumen development of calves but also plays an important role in their growth.

The Ingredients and Formula for the preparation of Calf Starter:

Ingredients	Quantity (percent)
Soyabean	15
Cotton seed	15
Maize	45
Wheat bran	8.6
Rice polish	9
Molasses	6
Vitamins/minerals	1.1
Mineral mixture/DCP	6.3
Total	100

Different Formulas for lactating Animals:

Here is the formula to prepare Concentrates for lactating animals on a domestic level so that the farmers can themselves prepare the best rations with minimum expense:

Ration Formula No. 1:

Serial No.	Ingredients of Feed	Quantity percent
1	Cotton seed cake	15.00
2	Maize carbohydrate 30%	20.00
3	Sunflower meal	5.00
4	Wheat bran	18.00
5	Rice polishing	15.00
6	Maize	10.00
7	Molasses	15.00
8	Mineral mixture	2.00
	Total	100.00

Crude Protein (%) = 17.6

TDN (%) = 75.3

Price (per kg) Rs = 15.60

Ration Formula No. 2:

Serial No.	Ingredients of Feed	Quantity percent
1	Soyabean	13.00
2	Canola meal	9.00
3	Cotton seed cake	12.00
4	Wheat bran	28.00
5	Maize grains	20.00
6	Molasses	15.00
7	Mineral mixture	2.5
8	Urea	0.5
	Total	100.00

Crude Protein (%) = 16.90

TDN (%) = 73.66

Price (per kg) Rs = 14.88

Ration Formula No. 3:

Serial No.	Ingredients of Feed	Quantity percent
1	Rapeseed cake	15.0
2	Cotton seed cake	15.0
3	Rice polishing	20.0
4	Wheat bran	28.0
5	Maize grains	20.0
6	Mineral mixture	2.0
	Total	100

Crude Protein (%) = 16.17

TDN (%) = 73.43

Price (per kg) Rs = 15.80

Ration Formula No. 3: (with Soyabean)

Serial No.	Ingredients of Feed	Quantity percent
1	Soyabean	14
2	Sunflower meal	15
3	Wheat bran	24
4	Rice polish	20
5	Grains	10
6	Molasses	15
7	Mineral mixture	2.0
	Total	100

Crude Protein (%) = 18.21

TDN (%) = 77.81

Price (per kg) Rs = 14.56

Ration Formula for dry Animals:

Serial No.	Ingredients of Feed	Quantity percent
1	Wheat Straw	50.00
2	Sunflower meal	20.00
3	Cotton seed cake	10.00
4	Urea	1.00
5	Mollasses	18.00
6	Mineral mixture	1.00
	Total	100.00

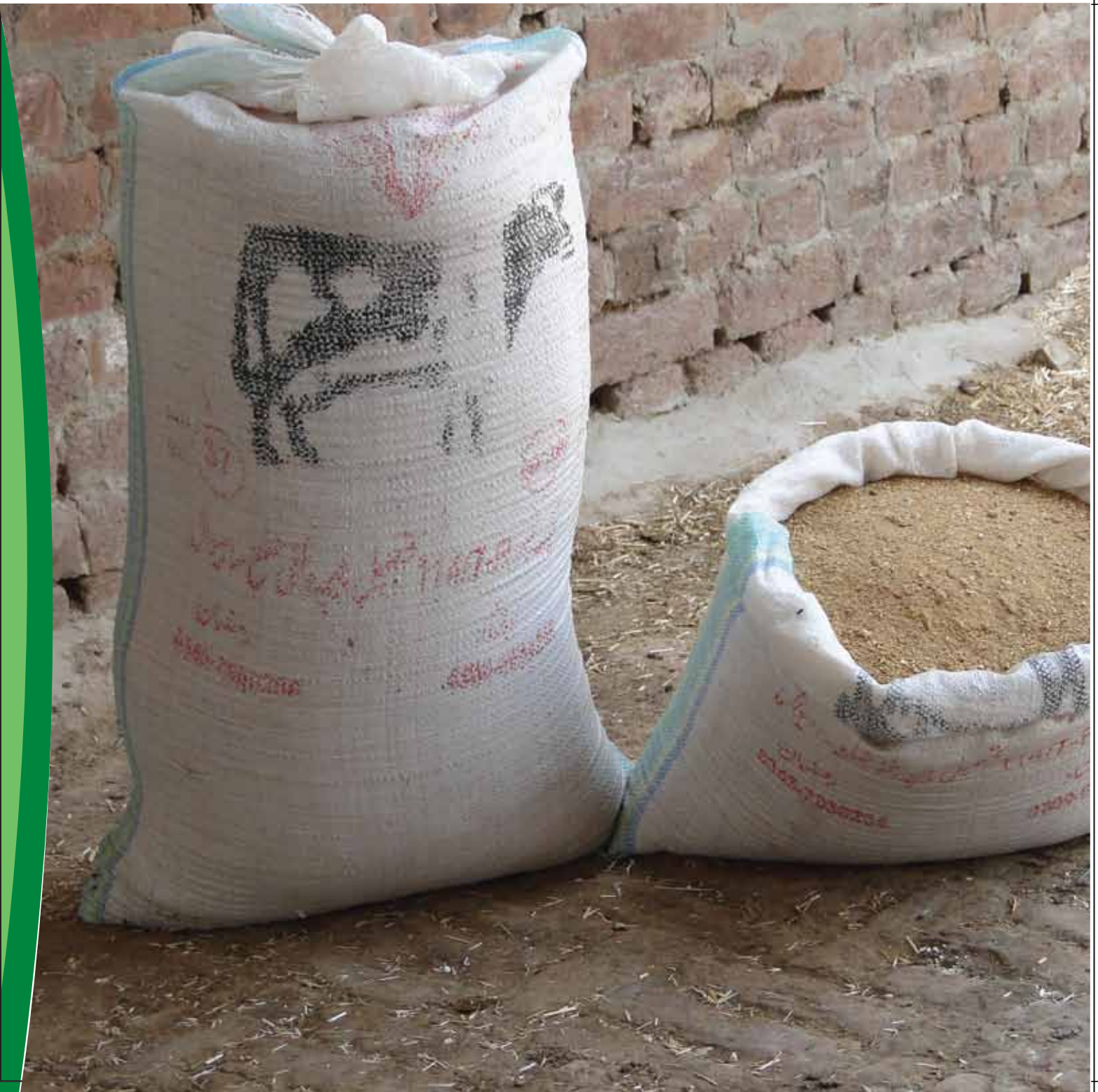
Crude Protein (%) = 12%

TDN (%) = 68.0%

Price (Rs/ kg) = 14.00

Daily Requirement = 8.0 kg

Daily Expense (Rs) = 112.0

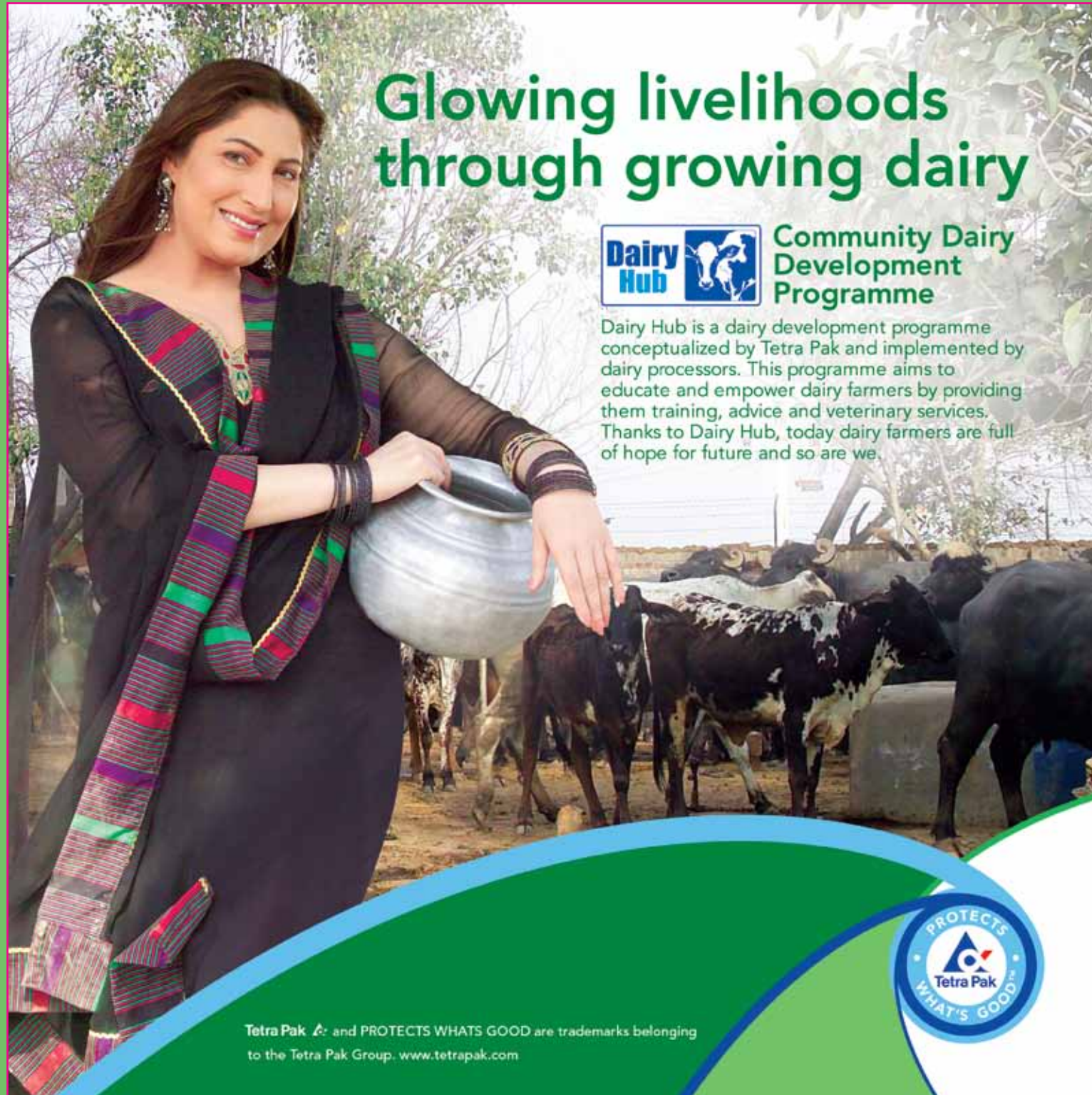


Glowing livelihoods through growing dairy



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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