Improving Feed Production Efficiency & Quality Control Aspects of Cattle Feed Plants

Cattle Feed Production in India:
Present & Future Prospectus

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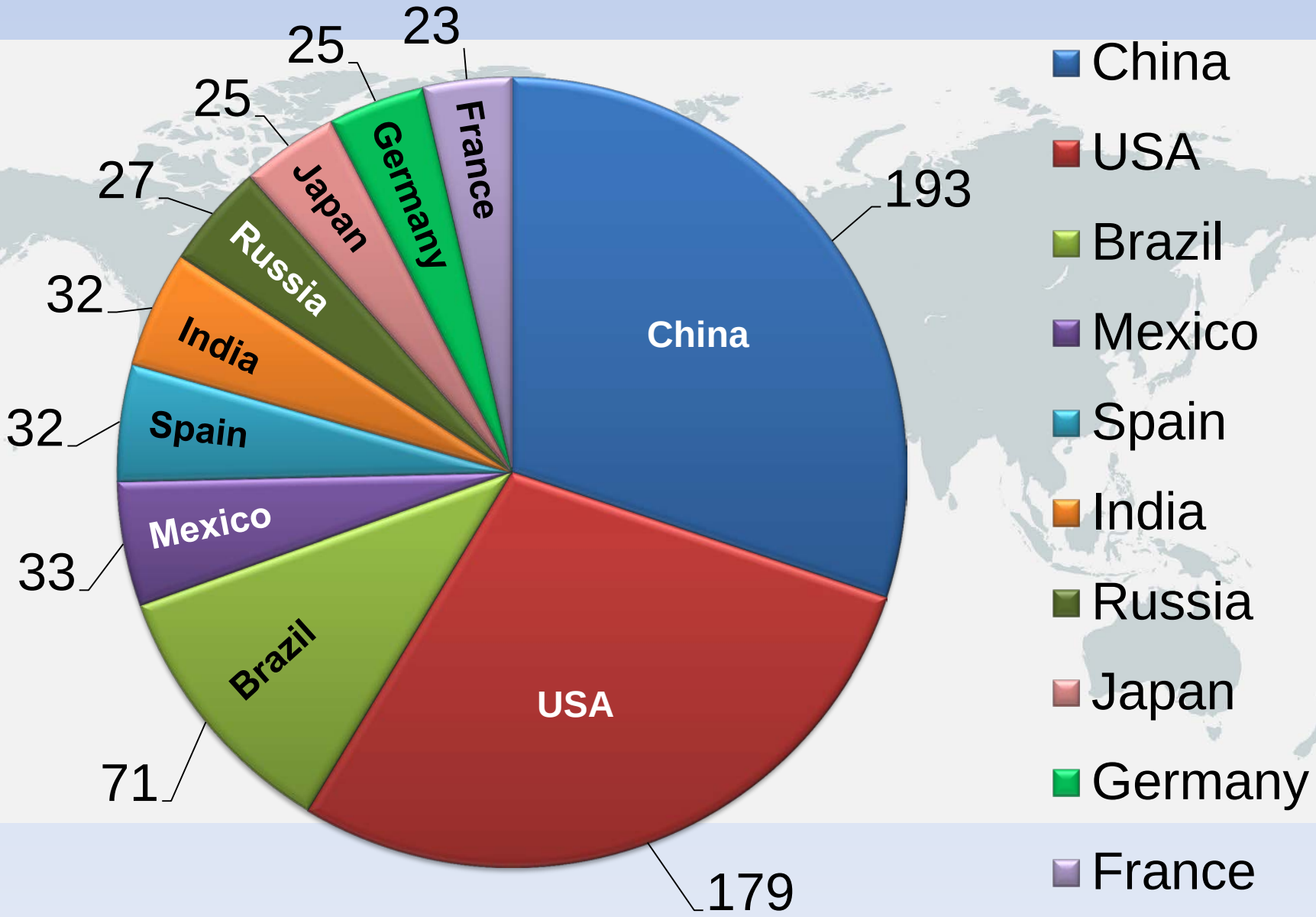
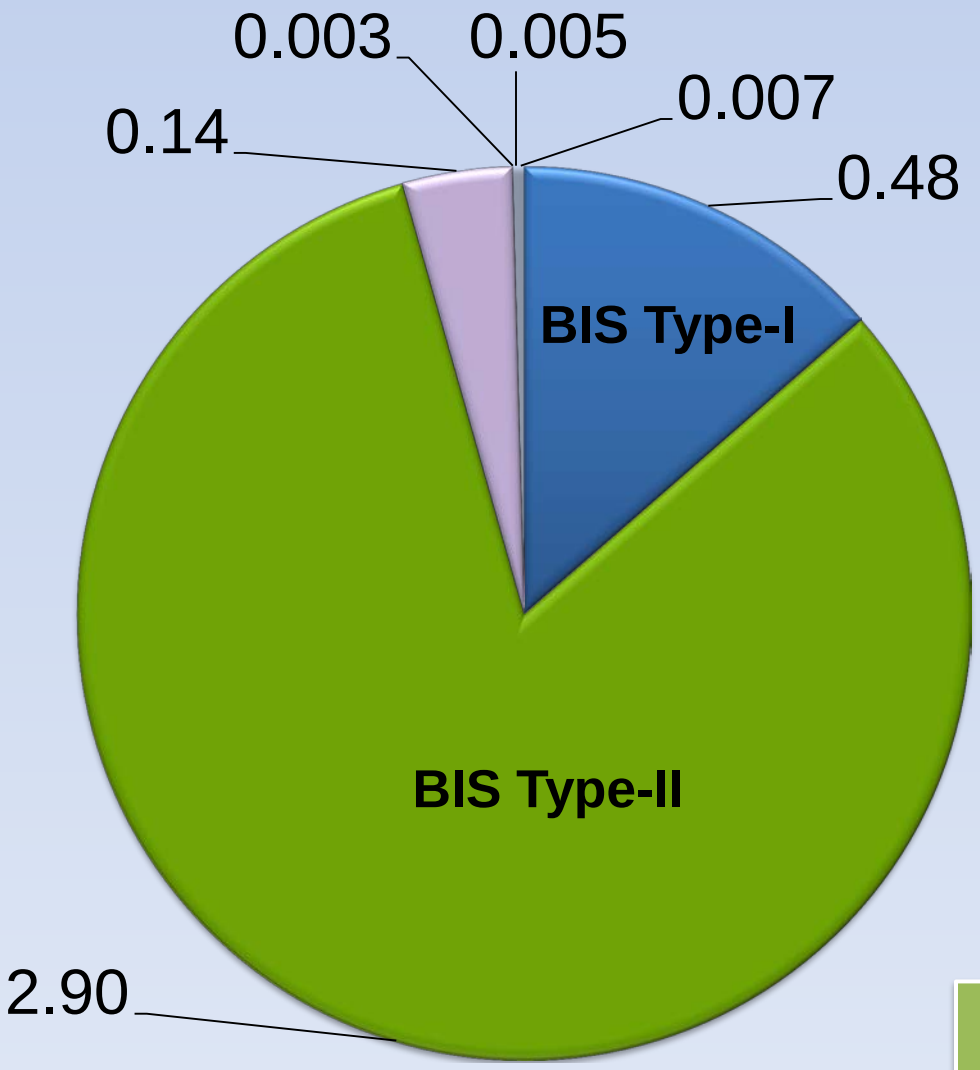
World feed production (million ton)



Cattle feed production in dairy cooperatives



Total feed production: 3.54 million ton/year

Types of feed produced (million ton)

- BIS Type-I
- BIS Type-II
- Bypass protein feed
- Buffalo feed
- Calf starter
- Pregnancy feed

Out of total cattle feed, BIS Type-II feed is about 82%.

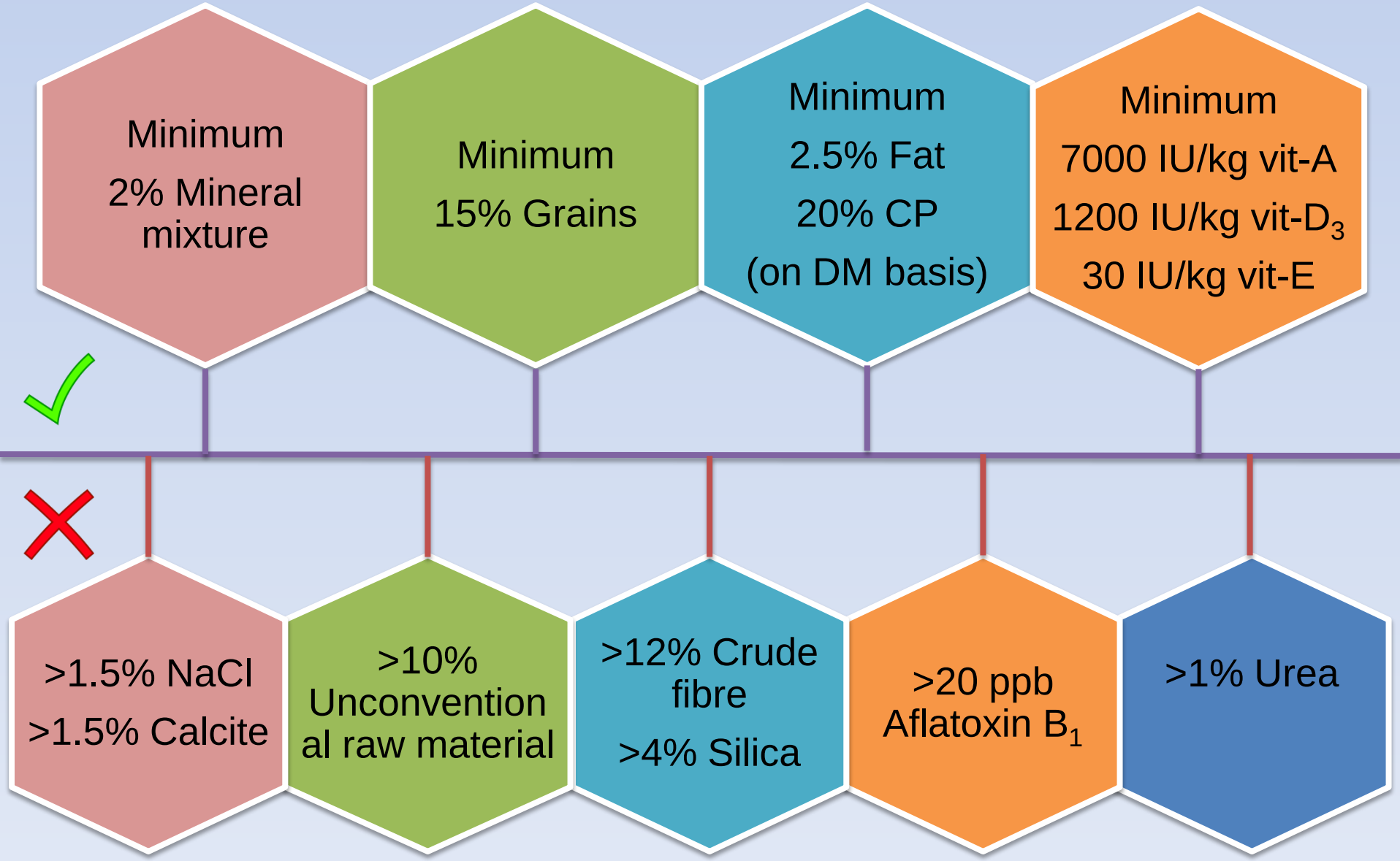
Livestock scenario of a district

Category of the animal	<1 yr calves	1-3 yr growing heifers	In-milk animals (up to 10 kg/day)	In-milk animals (>15 kg/day)	Dry animals	NECO	Other	Total female
Crossbred	72,240	73,482	85,141	**56,760**	46,452	12,166	2,121	3,48,362
Indigenous	85,257	91,086	1,35,188	**15,020**	72,730	19,753	4,135	4,23,171
Buffalo	1,93,226	2,55,132	3,03,648	**75,910**	1,66,433	48,774	12,684	10,55,807
Total	3,50,723	4,19,700	5,23,977	**1,47,690***	2,85,615	80,693	18,940	18,27,340

* Feed requirement of high yielding animals is about **1200 MT/ day**, whereas, a feed plant of 500 MT/day capacity in a district is usually producing only **90 MT** of high quality feed.

Most of the CFPs are producing only **BIS Type-II feed**, for meeting the nutrient requirement of animals yielding **7-8 kg/d**.

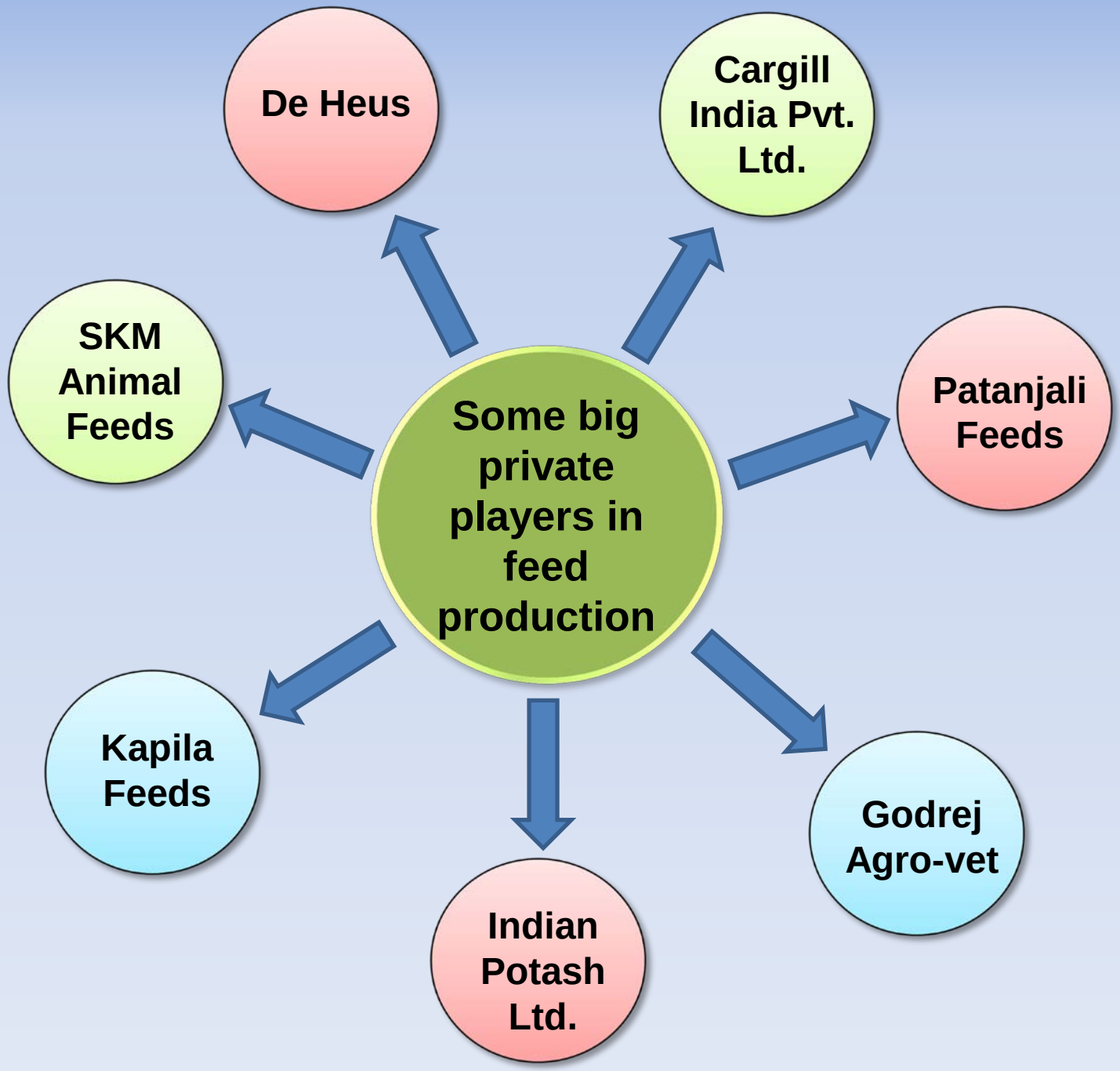
Expected quality of BIS Type-II feed



Quality of cattle feed produced in dairy cooperatives (*n*=150)

Parameters	Actual analysis*	Requirement * (BIS Type-II)	Cargill Feed Analysis*
Crude protein (%)	18.47 ± 0.25 (n=57)	Min. 20	22.86
Crude fat (%)	2.10 ± 0.11 (*n*=27)	Min. 2.50	5.70
Crude fibre (%)	14.35 ± 0.28 (*n*=32)	Max. 12	8.34
AIA (%)	5.39 ± 0.31 (*n*=19)	Max. 4	1.32
Urea (%)	1.52 ± 0.26 (*n*=6)	Max. 1	Nil

* On DM basis


Some big private players in feed production
De Heus
Cargill India Pvt. Ltd.
SKM Animal Feeds
Patanjali Feeds
Kapila Feeds
Godrej Agro-vet
Indian Potash Ltd.

Cattle feed as one of the ingredients along with 2-3 feed ingredients

Grains + Oilseed cakes + Chunnies

Trends in milk procurement & cattle feed production (cooperative *vs.* private)

Million ton/ year

18
16
14
12
10
8
6
4
2
0

5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0

Million ton/ year

3.55
0.74
1.75
0.42
15.57
3.54
18.00
4.50

5x
10x

Cooperative Sector
Private Sector
Cooperative Sector
Private Sector

1990-91
2015-16

Cattle Feed Production
Milk Procurement

Per unit cost of two different cattle feeds

Feed	Feed cost (Rs/kg)	Av. CP (%)	Unit cost of CP (Rs/kg)	Av. TDN (%)	Unit cost of TDN (Rs/kg)	Min Mix (g/kg)
A	16.5	17.0	**97**	62	**26**	10
B	19.0	22.0	**86**	75	**25**	20

Raw materials

Transportation
(~800 km)

Warehouse

Processing

Finished product

Packaging

Quality control

Transportation

Consumer

We need to answer these questions

YES

Trained manpower?

Freedom to take decisions?

Follow LCF regularly?
- Feed formulations
- Purchase decisions

Regular monitoring of quality?
- Feed raw materials
- Finished products

- Well equipped QC lab?
- All equipment functioning?

All sections of a feed plant are working efficiently?

Timely payment of raw materials suppliers?

Compromise in cattle feed quality with the increase in raw material prices?

Exclusive marketing team for CF & MM?


Future Prospectus

Ways to Improve Feed Quality

Produce feed for different categories of animals.

Not to compromise with the feed quality with the increase in raw material prices.

Ensure use of mineral mixture/ vitamins as per the minimum requirement.

QC officers strictly use raw materials selected in the LCF formulation.

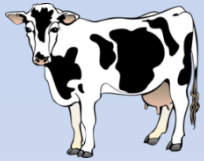
Follow LCF regularly for feed formulations & purchase decisions.

Up-gradation / modernisation of QC lab.

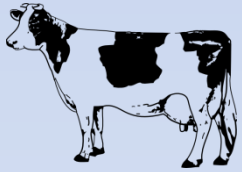
Recruitment & training of QC officers.

Different types of feed need to be produced

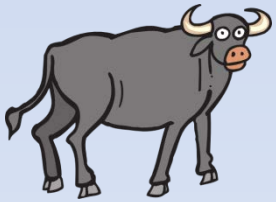
Feed for pregnant animals.



BIS Type-II feed (for medium yielding & dry non-pregnant animals).



Bypass protein feed (for high yielding animals).

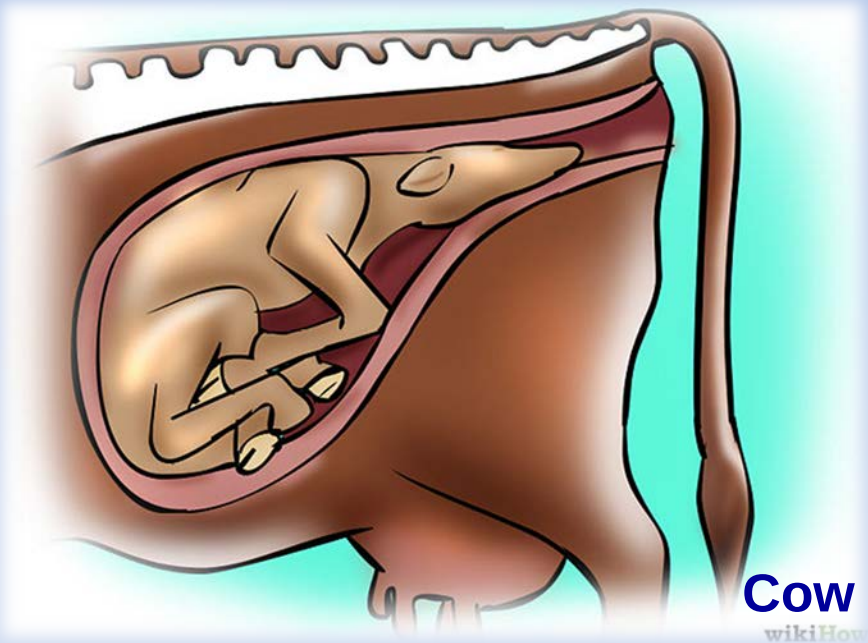


Buffalo feed.

Calf starter.

Calf growth meal.

Pregnancy feed for last 2 months of gestation



- Good quality protein meals, higher level of protein (min. 22%) & adequate amount of energy (grains 32-35%).
- Anionic salts & trace minerals in chelated form.
- Higher level of coated vitamins E (1,200-1,600 IU/d), A (50,000-60,000 IU/d), D_3 (20,000-22,000 IU/d).
- Common salt < 0.5%; other unconventional raw materials < 5%.
- NPN compounds.

Feed for high yielding cows & buffaloes

- Quality protein meals in rumen protected form & adequate amount of energy in the form of bypass fat @ 1-1.5% / grains @ 30-35%.
- Mineral mixture (minimum 2%).
- Adequate level of coated vitamins E, A & D_3.
- Add buffer in the ration @ 1%.

Feed for young calves & growing animals

- Good quality protein meals (soybean meal) and adequate amount of grains (minimum 30%), only maize.
- Calf Starter: coated sodium butyrate, calcium propionate, toxin binder, chromium chelate & anti-oxidant.
- Mineral mixture (minimum 2%).
- Adequate level of coated vitamins E, A & D_3.
- NPN compounds / unconventional raw materials.
- Use 3 mm pellet die.

Summary

- Qualified & trained manpower in QC laboratory.
- Need to set up adequate feed testing facilities, with latest equipment.
- Proper testing of raw materials to ensure quality of finished product.
- Testing of all the lots of finished product before dispatch.
- An urgent need to produce different types of feeds for different categories of animals, using LCF software.
- Mineral mixture should be added in cattle feed @ 2% minimum.
- Price of cattle feed should be changed proportionally with the change in price of raw materials.
- An exclusive team for promoting sale of different feeds & feed supplements.


Thank You