

# Technology for Preparation and Feeding of Bypass Fat (Rumen Protected Fat) to Dairy Animals



**ICAR Research Complex for Goa**  
(Indian Council Agricultural Research)  
Old Goa – 403 402, Goa

### What is bypass fat?

- Dietray fat, which is not degraded in upper part of digestive tract (rumen) of animal, but gets digested in lower alimentary tract is known as bypass fat.

### What are synonyms of bypass fat?

- Rumen protected fat.
- Calcium salts of long chain fatty acids.
- Calcium soaps.

### Why to supplement bypass fat to dairy animals?

- Immediate after calving, there is huge loss of energy from dairy animals through milk, but feed intake is reduced.
- Therefore, animals remain in negative energy balances.
- Due to above facts, milk production, reproductive performances and body condition of animals are adversely affected.
- Adverse effect is more in high producing animals.
- Bypass fat is rich source of energy.
- Besides, bypass fat is a good source of calcium.
- Thus, supplementation of bypass fat improves milk production, reproductive performances and body condition of animals.



### Why oil can not be included instead of bypass fat to get more energy?

- Inclusion of oil causes digestive problems in animals.
- As oil is degraded in upper part of digestive tract (rumen) of animals, availability of energy is lower than bypass fat.

### What are advantages of supplementation of bypass fat to dairy animals?

- Keeps animals in positive energy balance.
- Increases milk yield (up to 20%).
- Increases milk fat content.

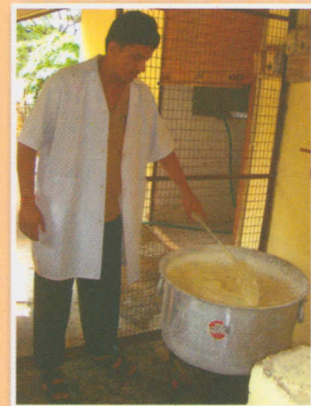
- Maximises peak milk yield and lactation days.
- Improvement in reproductive performances.
- Prevents post-partum weight loss.
- Improves general body condition.
- Protects from heat stress.

### Is effect of supplementation of bypass fat similar in all types of dairy animals?

- Effects is not similar in all types of dairy animals.
- Effect tends to be greater in high yielding dairy animals (cows producing more than 15 liters milk/ day and buffaloes producing more than 8 liters milk/ day).
- Effect tends to be greater in early lactation (0-90 days) than mid lactation (91-150 days).
- Effects tends to be more in Holstein cows

### Where bypass fat is available?

- Bypass fat containing different level of fat are available in market commercially.
- ICAR Research Complex for Goa, Old Goa has developed a simple indigenous pro-small farmer technology for preparation of bypass fat from vegetable (palm) oil fatty acids (by-product of oil refinery industry) and technical grade calcium oxide/ calcium hydroxide under specific conditions.



### What is the appearance and composition of bypass fat, prepared by ICAR, Old Goa?

- It looks like white or creamy granular powder.
- 70-75% vegetable (palm) fat (approx.).
- 7-8% calcium (approx.).

### How much bypass fat to be supplemented?

- 15-20 g/ kg milk production/ animal/ day.
- It can be supplemented to dairy animals 15 days before to 150 days after parturition.

### How bypass fat is supplemented?

- Bypass fat can be supplemented to dairy animals by mixing with concentrate mixture.
- It can be given as single dose or in divided doses.

## What is the economics of supplementation of bypass fat to dairy animals?

- Cost of production of the indigenously prepared bypass fat is highly dependant up on the cost of raw materials.
- In present situation, cost of production of bypass fat is 80/- per kg.
- Approximately, feeding 300g bypass fat/ animal/day increasaes milk production by 1.0-1.5 ltr/day, giving a net profit of ₹ 8-24/ animal/day.
- However, on purchase of raw materials in bulk, cost of production of the indigenously prepared bypass fat can be reduced significantly and profit will be more.

### For further reading.....

Naik, P. K., Saijpaul, S. and Rani Neelam (2007)... *Animal Nutrition and Feed Technology*, 7: 95-101.

Naik, P. K., Saijpaul, S. and Rani Neelam (2007)... *Indian Journal of Animal Nutrition*, 24: 212-15.

Naik, P. K., Saijpaul, S. and Rani, Neelam (2009)... *Animal Feed Science and Technology*, 153: 68-76.

Naik, P. K., Saijpaul, S., Sirohi, A. S. and Raquib, M. (2009)... *Indian Journal of Animal Sciences*, 79: 1045-1049.

Naik, P. K., Saijpaul, S. and Kaur, K. (2010)...*Indian Journal of Animal Sciences*, 80: 902-905.

### *Prepared By*

**Dr. P. K. Naik**

Senior Scientist (Animal Nutrition)

**Dr. N. P. Singh**

Director

### *Published By*

**Dr. N. P. Singh**

Director

ICAR Research Complex for Goa

Old Goa - 403 402, Goa

### *For Details, Please Contact*

**Dr. N. P. Singh**

Director

ICAR Research Complex for Goa

Old Goa - 403 402, Goa; Telephone: 0832-2284678/79

E-mail: [director@icargoa.res.in](mailto:director@icargoa.res.in); Website: [www.icargoa.res.in](http://www.icargoa.res.in)

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*Technical Assistance*

**Mr. Edward Crasta**

T-5 (Animal Sciences)

*Secretarial Assistance*

**Mr. S. Marathe**

T-5 (PME Cell)