

# **Enhancing Fertility in Cows through Oestrus Synchronization**

## **Background and Objectives**

Cattle in rural areas of Tamil Nadu generally suffer from two major reproductive conditions - *Anoestrus* condition or failure of coming to heat (20 – 30 %) and Repeat Breeding or repeated failure to conceive (around 10 %). These conditions result in abnormally long average inter-calving intervals of more than two years, as against an ideal interval of one year. In a recent survey conducted in Tamil Nadu, it was found that only 35 per cent of cows and buffaloes were pregnant as against a desirable level of 70 per cent; around one third of cows and buffaloes were infertile because of anoestrus or repeat breeding. This means that out of 50 lakh breedable cows and buffaloes available in Tamil Nadu, around 15 lakh are infertile.

Poor heat detection, untimely insemination, poor nutrition and lack of awareness on efficient husbandry practices are the major contributing factors for the widespread infertility problem in cows and buffaloes.

Oestrus Synchronization Technique was adopted in cows and buffaloes in rural Tamil Nadu to improve fertility, reduce inter-calving interval, improve milk production and enhance economic return to the farmer with assistance from NADP/RKVY of Rs 5.79 crores in 2008-09 and 2011-12.

Oestrus Synchronization Technology involves the use of certain drugs to bring a group of cows and buffaloes into oestrus at a fixed time and breed them. This technology has the following advantages:

- Induces heat in anoestrus animals thereby tackling a major cause of reproductive inefficiency

- Improves conception rate due to timely insemination.
- Brings the animal into heat at pre-determined time so that there is no need for dependence on the farmer to detect heat.

## **Intervention**

In this intervention, a device known as CIDR (Controlled Internal Drug Release) is impregnated with progesterone hormone and used as the main agent along with another drug called Prostaglandin F<sub>2α</sub> for synchronization of oestrus. In addition, the cows and buffaloes are primed with mineral supplements before starting the synchronization protocol. A total of 15,149 cows and buffaloes were oestrus synchronised and bred by AI in 20 districts of Tamil Nadu at a cost of Rs 2 crores in 2009-10. The districts covered were Villupuram, Erode, Salem, Kanchipuram, Thiruvallur, Namakkal, Dharmapuri, Pudukottai, Thanjavur, Nagapattinam, Tirunelveli, Krishnagiri, Vellore, Thiruvannamalai, Sivagangai, Cuddalore, Tiruchirapalli, Karur, Thiruvarur and Dindigul.

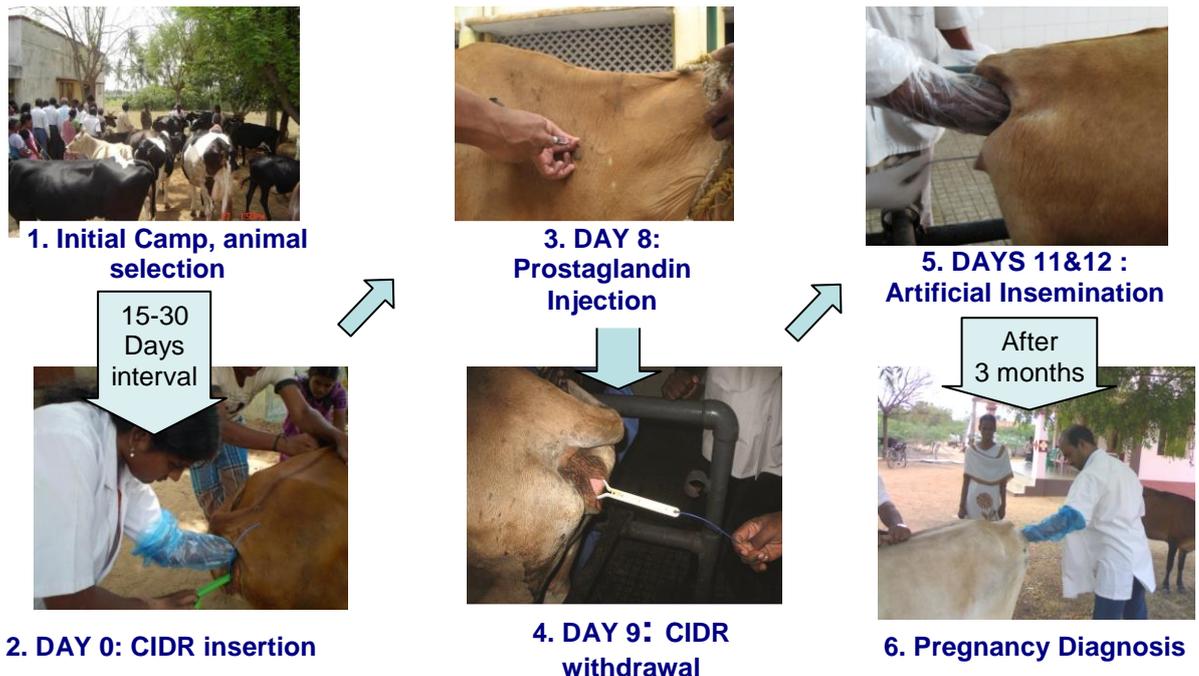
The Tamil Nadu Veterinary & Animal Sciences University (TANUVAS) piloted the project through its network of 16 Training and Research Centres in the districts. All procurements were done centrally by TANUVAS and distributed to the line departments. 750 veterinarians of the Department of Animal Husbandry, Co-operative Milk Unions and Veterinary University were involved at field level.

Major steps involved in Oestrus Synchronisation and Artificial Insemination (AI) were as follows:

- Potential villages were selected by the veterinarian
- Camps were organized, wherein cows and buffaloes were examined individually and the animals are selected.
- Selected animals were given a dose of de-worming drug and two kg of mineral mixture to be fed at the rate of 30 g daily

- The selected animals were re-examined after 15-30 days and the synchronization protocol was adopted
- After three months the pregnancy was verified in all the identified animals.

## **SYNCHRONIZATION PROTOCOL EMPLOYED IN SELECTED COWS**



Buoyed by the success of the first phase of the project that was taken up in 20 districts only, an additional project of Rs 3.79 crores has been taken up during 2011-12 to extend oestrus synchronisation technique in 50,000 cows and buffaloes spread over all districts of Tamil Nadu (including all anoestrus animals at the District livestock farms).

### **Outcome**

The results of this project manifest in three ways, viz.,

- ✓ improving fertility and reduction of inter-calving period that can be measured by the success rate of AI
- ✓ improvement of milk production, and

- ✓ salvaging infertile cows which otherwise find their way to slaughter houses.

This project achieved a conception rate of 60.25 % in mostly infertile cows and buffaloes. It improved conception rate by 20-25 % and reduced calving interval by 5-6 months. This means the farmers were saved from maintaining unproductive animals for a long time and they earned more income because of more days of milk production.

For various reasons, milk production has remained static In Tamil Nadu at 5.5 – 5.7 million tonnes for the last 4 years. The reduction in inter-calving interval would result in 30 - 40 % increase in milk production from an individual animal. If the synchronization technology is adopted in fairly large number of cows, e.g., in 2 lakh cows, it would improve the total milk production by 700 lakh litres in a year. This would help to meet the increase in demand for milk and also help to control price inflation.

The most important outcome is that 9,124 cows and buffaloes had become pregnant out of 15,149 synchronized. Induction of heat was almost 100 % in anoestrus (not coming to heat) cows and buffaloes. A conception rate of 60.23% achieved in mostly infertile cows and buffaloes is a significant feat.

The implementation of this Project resulted in improvement in milk production by 46.0 lakh litres (8,550 cows calving x 90 milking days x 6 lit/day) on annual basis. This improvement in milk production comes without increasing the number of animals and exerting pressure on feed resources. In addition, this project could salvage at least 20-30 % of cows and buffaloes from going to slaughter as unproductive animals.

**Economic Returns from this project (Project cost excl. non-recurring: Rs. 1.58 Cr.)**

<b>No</b>	<b>Economic Impact and Return to Farmers</b>	<b>Rs. in Crores</b>
1	The increase in value of the animal as it becomes pregnant. (15,000 x 60 % preg. x Rs.8,000 value addition)	7.20
2	Savings through reduction in calving interval (8,550 x 120 x Rs.20/day – maintenance cost)	2.05
3	Incremental days of milk production as calving interval is reduced & number of calving increased (8,550 x 90 days x 6 lit/day x Rs.15/lit)	7.39
4	Economic gain through sale of female calves (2,990 x Rs. 10,000)	2.99
	<b>Total Economic Benefit</b>	<b>19.63</b>

Mrs. Mallika Sekar of Kachur Village in Thiruvallur District of Tamil Nadu says “My buffalo is 8 years old and did not come to heat. When a camp was conducted here (under RKVY), I brought this animal. First they examined it and gave mineral mixture and de-worming drug and asked to bring the animal after one month. When I brought the animal to the next camp, they introduced a tube like thing (CIDR) into the vagina and when I asked what it was they replied that it is a device that will make the buffalo come to heat. Subsequently, after the removal of CIDR, the animal came to heat following which it was inseminated artificially twice. It is now confirmed that the buffalo is pregnant.”

She also adds “Earlier we were planning to sell the buffalo and now since it is pregnant we will not sell. Brokers were asking us to sell it at slaughter rate of Rs. 5,000 – 10,000. Since we were rearing this buffalo for 8 years, we were reluctant to sell. But out of frustration only we were about to sell the animal. Now after calving the buffalo would fetch Rs. 20,000 – 25,000. During the first calving it is expected to yield not less than 5 litres a day and in the next, it will give about 8 litres a day”.