

# The ordeal of Vechur cow conservation

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## 1. Introduction:

In an age when thousands and thousands of wild and domestic species are going into oblivion every year, saving Vechur Cow, the smallest cattle in the world, from the brink of extinction was possible through an enviable collaboration of Animal breeders, students and the local people. A group of motivated conservationists were behind the initiation of the Project. Conservation of biodiversity has always been a sensitive issue and in the conflicting interests many have got hurt if they themselves did not become extinct. The experience of those involved in the Silent valley conservation was not different. At that time calling a person a spy of America or any western country was perhaps the most unbearable thing for a patriot. But with the conservation of a small cow no difficulty other than that connected with the conservation like getting sufficient number of animals and the required funding was anticipated. But the path was not smooth.

## 2. Conservation Efforts:

Vechur cattle were on the verge of extinction in the 80's. Many thought that they were extinct. But it had been due to the efforts of an enthusiastic team of students with me, the available Vechur cattle were brought to limelight as a result of an ardent search that lasted for months. The core team consisted of Anil Zacharia, N. Jayadevan, Jayan, K.C., Kuriachan, O and Jayan Joseph. Vasudevan Namboodiri was a student who had a longing for conserving these animals in situ. The search was started from Vechur and local support was immense. The positive attitude of some of the local people like Kaitharan Narayana Iyer and Veterinary Officer Dr. Raveendran instilled optimism in the team. An extensive survey has been made throughout Kerala. Animal Husbandry institutions, Dairy co-operative units, local libraries, Schools, Voluntary organisations and other institutions were contacted. Regular help was received from all these corners. House to house visit was a routine. This was done on week ends and holidays as this was a vol-

untary work. The "Save Vechur" campaign and the network so formed was very effective.

The spotting of a Vechur cow with Manoharan, a toddy tapper of Ullala (formerly a part of Vechur village) was the exciting first step in the conservation. Few others were also spotted. The Vice Chancellor Dr.E.G.Silas could easily be convinced of the necessity for conservation of Vechur cattle and the initial funds could be got sanctioned. The owners were coaxed and the University purchased the animals spotted. The cleaning of the premises and an old shed to house the animals were done mostly by the students especially the junior most in the year 1989. The Vechur Conservation Unit came into existence in Kerala Agricultural University with 4 calves, 1 heifer, 2 bull calves and a bull. The search for animals continued by the team and 24 animals could be added to the lot in one year. The conservation team continued its support for the conservation programme in Kerala Agricultural University. The ICAR subsequently started funding the conservation project.

## 3. The Vechur Cattle:

The animals are extremely small in size and have compact body with an average weight of about 130 Kg. for cows and 170 Kg. for bulls, and height below 90 cm and 100 cm. The animals have solid colour. Red, black, chocolate and sandal white are commonly seen. The hump is present and tail almost touches the ground. The lightweight strong bullocks were commonly used for ploughing the marshy paddy fields. The adaptability to the hot humid environment, and low feed requirement are some of the good qualities of the cows. However the farmers' preference to the cow had been due to their relatively higher milk yield. The average yield is 2-3 kg per day. The milk of Vechur cows is supposed to have high medicinal value and has been extensively used in the Ayurvedic system of medicine.

Grading up of the local cattle with Red Sindhi was the government policy in the 50's. The policy of massive crossbreeding with for-



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eign blood adopted and aggressively pursued since the 60's, transformed the local animals including Vechur to crossbred throughout the state. Local bulls were not permitted to be retained as per Kerala Livestock Act, 1961. However temple bulls were exempted from this. The government policy, coupled with a cultivated preference of the farmers for crossbred cows yielding more than double the milk of local cows in the first generation itself, led to the near extinction of the Vechur cows.

#### **4. Research Findings:**

**4.1** Milk production was found to be 2.3 kg per day on the average during the lactation period. The age at first heat and age at first calving were 19 and 36 months respectively. The intercalving period was 14 months.

#### **4.2 Chromosome number and morphology:**

The karyotyping analysis revealed a diploid chromosome number of 60 comprising of 58 autosomes and two sex chromosome. All the 29 pairs of autosomes were acrocentric in appearance. The X chromosome in both sexes showed a bi-armed submetacentric appearance. The Y chromosome was acrocentric.

#### **4.3 Studies on milk composition:**

Milk components such as fat, solids not fat and total solids were studied from individual milk samples at weekly intervals in the morning and evening milk.

**1. Milk fat:** The mean milk fat percentage for the morning and evening at first week was  $4.05 \pm 0.19$ ,  $4.65 \pm 0.17$ . The evening milk had uniformly higher fat percentage than morning milk. The fat percentage showed an increasing trend with advancing stage of lactation.

**2. Solids not fat:** The average solids not fat percentage was  $8.84 \pm 0.12$  for morning and  $8.92 \pm 0.14$  for evening milk. The mean solids not fat percentage at first week of lactation was  $8.60 \pm 0.24$  and  $8.93 \pm 0.22$ . It was  $8.83 \pm 0.11$  and  $8.76 \pm 0.15$  % in the morning and evening milk by 20th week of lacta-

tion. No trend of increase was observed with advance of lactation.

**3. Fat globule size and distribution:** The mean size of fat globule was 3.21 (and the range was 2.54 to 4.07). The mean diameter of fat globules was found to be  $3.02 \pm 0.05$  in the morning and  $3.40 \pm 0.05$  in the evening milk. The average fat globule size was found to be decreasing as the lactation advanced. The sizes of the fat globules were found to be higher than that of goats and lower than that of crossbred cow and buffalo milk.

#### **5. Embryo Transfer as a Tool in Conservation:**

Multiple Ovulation and Embryo Transfer (MOET) technique was used for conservation.

A Vechur cow 'Nandini' was subjected to multiple ovulation and insemination with semen of 'Ganesh', a Vechur bull. Five embryos were recovered and deposited into the uterus of two recipient cows; which resulted in two pregnancies. One of the recipients was 'Anupama', a crossbred Vechur cow, and the other was a Holstein Friesian (HF) cross. The HF crossbred cow was subjected to artificial insemination in her natural heat period using frozen semen from a Holstein Friesian crossbred bull prior to embryo transfer.

'Anupama' gave a female calf and the HF cross gave birth to two male calves. One of the male calves had all the typical features of HF cross. The other male-calf and the female-calf from Anupama had all typical Vechur characteristics. The female-calf from Anupama weighed 8 kg. The male-calf of Vechur type of HF cross weighed 13 kg. The HF crossbred calf weighed about 23 kg at birth. The female-calf was named 'Anjali' and male-calves were named 'Lavan' and 'Kusan'. Next attempt resulted in only one calf by embryo transfer.

#### **6. Controversy:**

In spite of all the encouragement and success, the conservation programme faced lot

of hurdles. The controversy started with the proposal for collaboration from Kerala Co-operative Milk Marketing Federation (MILMA), which had an approved centre for embryo transfer of the department of Biotechnology, Govt. of India.

This was reported in a daily newspaper as collaboration with an "outside agency" when within the University facilities were available with another department. (The readers won't bother to tell the reporter that it is not a sin to collaborate with experts outside the University) Then came the mutilated story of 'Roslin Institute stealing "the embryos". Idle man's brain the devil's workshop!

Between 1993 and 1996, 19 Vechur animals died under mysterious circumstances, due to malicious poisoning. Several 'imaginative' stories appeared in newspapers trying to malign the project and those associated with the conservation project. But the mystery was never solved.

A Fax message from Dr. A.P.Usha, Asst. Professor, KAU, who was doing her Ph.D. in the Roslin Institute, UK, requesting details on Vechur cattle and hinting a possibility for collaboration was reproduced in some media as with aspersions about the very intention. Now defunct twin newspapers, 'Indian Communicator' (English) and 'Sadvartha' (Malayalam) probably sowed the seeds of all false stories.

But the allegations caught the attention of the scientific community with Vandana Siva's indulgence. Her article, "Challenges to Animal Protection" indicated the high value of the butterfat content of Vechur cow milk and the possibility of Roslin earning billions of dollars by transplanting the high fat genes of Vechur probably to their cows. (Who found out the high fat genes?). In one of the TV talks she said about the patenting of Vechur cows by Roslin Institute and the availability of details in the different websites. Siva also gave a patent application number EP 765390. A sector of the media used the material from Siva (who appeared to have received the 'story' from

the media itself initially) as a very spicy hot masala to their advantage when major sector of the media was either countering it or remaining neutral. The allegation that the Vechur cow was patented was countered by the clarification that a breed or any naturally occurring organism cannot be patented. The service by Mr. Krishnakumar of the Frontline in bringing out the truth has to be specially mentioned. He interviewed several people in this context.

Dr. Syamasundaran Nair, Vice-Chancellor, Kerala Agricultural University said: "I will support my scientists fully on this and the Government or any other agency is free to conduct an inquiry. The university will provide all material and help to any such agency".

Dr. P.G.Nair, former Director of the National Bureau of Animal Genetic Resources (NBAGR) in Karnal, Haryana, now based in Thrissur, described in the "Frontline" the entire controversy as 'ridiculous'. Vechur cattle are special in that their milk production is higher-but only when compared with that of other native cattle of Kerala. However, compare its production of three to four kg a day with the 40kg to 50kg a day of an exotic breed like Holstein and its economic value becomes clear. Its supposed value owing to the high fat content in its milk is important only in the Indian context. The trend the world over is to produce animals that give low-fat milk. The suggestion that the Vechur germplasm has been smuggled out, especially because of the alpha-lactalbumin found in the Vechur cow's milk, is absurd because this protein is found in the milk of many mammals, including humans, he said. Vandana Siva replied to the question about the basis of her allegations that "Just as there are cases of major biopiracy in plant genetic material there are indications and possibilities that similar biopiracy in animal genetic wealth from India could also be taking place. Since the Roslin Institute, which is linked to the leading firm in animal biotechnology, PPL Therapeutics, has major interests in unique genetic trades for ge-

netic engineering in animals for the production of chemicals and pharmaceuticals, bioprospecting for animal genetic material is a necessary part of its activities. The cloning and patenting of 'Dolly' was part of the collaboration between PPL and Roslin for genetic engineering of animals. The research association between the Kerala Agricultural University (KAU) and the Roslin Institute as well as the fact that the KAU holds the germplasm of the unique Vechur cow suggest that the potential for bioprospecting links between Roslin and the KAU needs to be explored. The basis of my claim that an epidemic of biopiracy is taking place is "ten years of research of monitoring of biopiracy-based patents." Siva added that Prof. Graham Bulfield's claim that he does not know about the existence of Vechur cow is no proof of the Roslin Institute not having used genetic material from that breed. His claim that the Institute has no germplasm is false since a genetic engineering laboratory cannot work without germplasm. It is its basic raw material. The Vechur breed is "the most important cattle breed" for the conversion of feed to protein, which obviously makes it very significant for an industry trying to do mass production of chemicals through animal factories" for which corporations such as PPL hold patents for "mammalian bioreactors", that is, the use of mammary glands of animals, including humans, to produce specialised chemicals.

Harry Griffin, Assistant Director, Roslin Institute said "The story is entirely groundless. The Roslin Institute does not have any programme for conservation of "germplasm" of rare breeds from either the UK or overseas. We have never carried out any research on Vechur cows and we have not attempted to import embryos or germplasm or patent the breed or its genome. The claim that we have erased 36 references to work on Vechur cattle from our Website is simply nonsense. We have done no such work and no reference on Vechur cows has ever been on our Website.

In subsequent reports, Ms. Vandana Siva cites a particular patent number, **EP 765390. This**

**application is entitled "Alpha-lactalbumin gene constructs" and was submitted by PPL Therapeutics, not the Roslin Institute. PPL's application refers to the use of gene constructs for the targeting of the expression of human alpha-lactalbumin to the mammary glands of transgenic cows. The aim is to produce milk of enhanced nutritional value for premature infants. There is no connection whatsoever with any specific breed of cattle, Indian or otherwise.** Let me review the evidence so far. An Indian environmentalist claims that the Roslin Institute has "stolen" the Vechur germplasm and applied for patent on it or its genome. **No evidence to support this allegation is provided and indeed news reports from India refers to "charges" and "rumours".**

A search by an Indian Government official found no evidence for any relevant patent. Moreover, the supposed value of the Vechur cattle - the high fat content of its milk - is in fact a liability in Europe and North America where the demand is to decrease milk fat. And when challenged to provide evidence about the alleged patenting by the Roslin Institute, **Ms. Vandana Siva cites a patent application submitted from an entirely different organisation that concerns the introduction of human genes in cows".**

During this period the Vechur Conservation Trust formed with the former volunteers for search of Vechur cow was alleged as a family trust and association of Government officers with this trust was termed as contrary to Government servants' conduct rules. But a clarification to the effect that Government organisations and nongovernmental organisations are expected to work hand in hand in the service of the people probably put an end to it. Everybody knows there are umpteen number of trusts and associations in which Government servants are members and the motive behind this allegation also was not ignorance, but maligning.

Vechur cow is an Indian cow. Almost all the Indian breeds of cattle are with other countries. Many foreign breeds are with us in India. There is to and fro flow of germplasm.

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**The Vechur**

It is a free for all situation. Then what is special about the small cow of Kerala?

The unveiling of truth put an end to patent allegations. But what was the service rendered by those who made the allegations to the society and the conservation work? The valuable time lost is irreversible. If fooling the people who can read newspaper was the intention they have succeeded. A handful of people tried to poison the mind of the community. But the lesson is nobody can fool the people for all the time.

The Vechur Project and conservationists got a real boost when the central minister Sri Hukum Deo Narayan Yadav came to see the Vechur cattle. He said that ever since he took charge as the Minister he wanted to come and see the Vechur cow. He said that the Vechur cow brought him to Kerala and it has a very important place.

The Ahalaya Mata Jeevdayal trust came out in recognition of this conservation project with an award for the work. The Deendayal trust decided to keep Vechur animals in

their indigenous cattle conservation project at Chitrakudam. Demand for Vechur animals is on the rise.

The support to the cause of conservation from different corners had been great and it continues. The stock in Kerala Agricultural University is around one hundred now and over fifty animals had been sold out side. About 30 small herds in different parts of the State work in collaboration with the Kerala Agricultural University in conservation. Vechur cow is found quite suitable for farmers who require milk only for home consumption. Many farmers are looking forward to the fulfilment of their goal of keeping a Vechur cow.

Anybody working on conservation should anticipate moments you would feel that you are alone on this earth. But you will soon realise that there are good souls by your side. When I look back to my work rather the work of our team for the last 12 years on the Vechur cow I have no regret and have the satisfaction that this small cow is not remaining in history alone but she lives with us. □