# Conservation, Improvement and Production Performance of Indigenous Milch Breed of Cow under semi-arid conditions of Rajasthan

**Challenges:** Large proportion of farming community in semi-arid area of Rajasthan engaged in crop production since long back but income from crop production is meager and irregular. Every year income of large number of small, marginal farmers and landless labours in semi-arid area of Rajasthan is affected owing to low return from crop production. The nutritional status of farming community is also inadequate. Cost of inputs for raising crop production has been increasing every year whereas proportion of profit has been decreasing every year. There was a demand to maintain and conserve cows of hard indigenous milch breed which may provide regular income with available inputs under semi-arid conditions of Rajasthan. Gir breed of cattle was found to be most suitable under semi-arid condition of Rajasthan.

## Initiative: Importance of indigenous cow milk:-

Desi cow milk or A2 cow milk has been gaining popularity over past one decade due to its health and nutritional benefits as it has proven to be rich in proteins, minerals and vitamins etc. Gir breed of cattle in India is also known as Desi cow which comes under milch category. Gir cow milk has A2 beta casein protein which has been considered beneficial for human. A2 beta casein present in A2 milk breaks down into amino acids for quick digestion which results in improving overall health and increase the nutritional value derived from Gir cow milk. A2 milk is a rich source of minerals such as calcium, potassium, phosphorus which are necessary for strong bones and teeth, better functioning of muscles, regulation of blood pressure, tissue and cell growth and enhancing good cholesterol(HDL) and maintain overall nourishment and well being of body. Gir cow A2 milk also has essential vitamins like vitamin A,D and B12 which are necessary for bones and teeth, building immunity and converting food into energy. A2 milk contributes equally in building immunity, increasing metabolism and in providing Omega 3 fatty acids. These fatty acids contribute highly to mental growth too. Keeping in view the importance of A2 milk, a

demonstration unit of Gir cows was established at Dairy Farm during 2017-2018 with financial assistance of RKVY. Genetically pure Gir (cows-37/bulls-2) were brought for RKVY projects from Gujarat where breeding tract of Gir cow exists. All animals were new for semi-arid condition of Rajasthan and took nearly six months in adaptation. Gir cows of high milk producing ability were purchased and brought from Gujarat where the actual breeding tract exists. Major purpose was to establish genetically pure Gir cow herd at S K N College of Agriculture, Jobner for conservation, improvement and milk production. In order to get adapted, approximately six months were taken by Gir cows at Dairy Farm. All animals were provided comfortable environment under tail to tail system with adequate loose housing facility. Thumb rule of feeding was used for all category of Gir animals at Dairy Farm. All animals were managed scientifically at Dairy Farm. Gir cows performed well under semi arid condition of Rajasthan. Two genetically pure Gir bulls were also purchased from Amreli district of Gujarat and brought at Dairy Farm.

Fig: Established herd of Gir cows at Dairy Farm, SKNCOA, Jobner


**Key results:** All the activities of Gir cow project were carried out as per objective of the project. Keeping in view various objectives of the project and requirement of Gir cows, following steps were taken to meet the objectives of project.

1. **Infrastructure developed for Gir cows at Dairy Farm**:

Infrastructure facilities like modern shed, milk parlor with BMC, automatic milk packing and deep freezing were created at Dairy Farm. Gir cow herd was established at Dairy Farm by

purchasing pure Gir cows with financial support of RKVY. All machines have been made operational for demonstration to large number of farmers and farm women and daily production.

**2. Forage Farm Established at Dairy Farm:**

SwarnJayanti Forage Farm was established at Dairy Farm to meet the requirement of green fodder for Gir cows. Approximately fifty varieties of various forage crops have been established at Forage Farm which proved to be very useful for maintaining good health of all categories of Git animals at Dairy Farm. Adequate green fodder has been received for cows since its establishment. Most of the forages at this farm are of perennial in nature.

3. **Created awareness for Gir cows among farmers/farm women**:

In order to make farmers/farm women aware about A2 milk, live demonstration /training of various activities of Gir cows were given to farmers and farm women. Information related to management of Gir cows and milk production were provided to farmers/farm women who visited Gir cow unit at dairy Farm. Thousands of farmers and farm women have visited various activities of Gir cow herd over a period of five years at Dairy Farm, S K N College of Agriculture, Jobner. When KisanMelas were organized at SKNAU, Jobner farmers and farm women visited Gir cow unit and showed overwhelming response in Gir cow herd maintained at Dairy Farm,Jobner.

**4. Milk Production and Recording:**

Gir cow milk has been considered A2 milk which is good source of calcium and protein. Gir cow milk is rich in calcium, phosphorus, fat, potassium which helps to maintain blood pressure. A2 milk contains healthy vitamins that help in absorbing phosphorus and calcium which is necessary to build and maintain bones and teeth. Milk yield of each cow was recorded to study the performance of Gir cows under semi arid condition of Rajasthan. Gir cow milk belongs to A2 milk and has become very popular among large number of families in Rajasthan. The Gir cow milk has been found nutritious and easily digestible by all age group human being. In Rajasthan, Gir breed has been considered one of the best breed due to its less feed requirement and hardy nature. Gir cows are good in milk production. Maximum milk production of Gir cow was recorded 3072 litres in 254 days. Gir cow is one of the best Indian indigenous breed

producing A2 milk and can withstand with high temperature under semi arid condition of Rajasthan.

### 5. Rearing of Male Calves for distribution to Gausalas and farmers:

Male calves of Gir breed were reared under scientific management at Dairy Farm and subsequently were provided toGausalas and livestock farmers for genetic improvement and breed conservation. Genetically pure elite male calves have been selected for breeding purpose and provided to Gausalas free of cost. Distribution of young Gir males to Gausalas and livestock farmers has been very encouraging since establishment of Gir herd which is essential part for genetic improvement.

### 6. Training and Demonstration:

Live demonstration and training on various activities of Gir cows were given to large number of small, marginal farmers and landless labours in semi arid area of Rajasthan. Large number of small, marginal farmers and landless labours have been given complete information related to breeding, feeding, health of Gir cows. Local farmers are maintaining Gir cows for milk required for domestic purpose and remaining milk is provided to market as it fetches more money. Having obtained demonstration and training young farmers/entrepreneur have started Gir cow milk production as organic milk which is sold at very high price to customers.

### 7. Registration with FSSAI, Government of India:

In order to sale packed Gir cow milk, FSSAI certificate was required. Application for registration was submitted to Food Safety and Standard Authority of India(FSSAI) in March 2021 and Registration Certificate was obtained by Head of the Department, LPM, SKNCOA, Jobner on 25.03.2021. The FSSAI registration number is 22221046001346 which is valid for five years.

### 8. Distribution of genetically pure Gir cows/heifers and young bulls:

In order to conserve Gir cow under semi-arid conditions of Rajasthan genetically pure Gir cows/heifers and young bulls were provided to Gausalas, farmers and KVKs of SKNAU. In view of importance of Gir cows, conservation work has been started at various Gausala/private farms/farmers under semi-arid condition of Rajasthan. The details of various categories Gir breed animals are as under.

| SN | Category | Agency | Number |
|---|---|---|---|
| 1 | Gir cows | KVKs/Farmers | 10 |
| 2 | Heifers | KVK/Farmers | 30 |
| 3 | Young bulls | KVKs/Farmers/gausala | 30 |
| 4 | Old bulls | Farmers/gausala | 02 |

## 9. Income generated under Gir cow project:

Having established the Gir cow herd at Dairy Farm, S K N College of Agriculture, Jobner, following income was generated by selling milk, farm yard manure and other miscellaneous items at Gir cow unit under RKVY.

| SN | Year | Income generated in Rs | Remark |
|---|---|---|---|
| 1 | 2017-2018 | Rs 654893.14 | Sale of Milk/Manure |
| 2 | 2018-2019 | Rs 1420351.75 | Sale of Milk/Manure |
| 3 | 2019-2020 | Rs 2072074.46 | Sale of Milk/Manure |
| 4 | 2020-2021 | Rs 2169265.70 | Sale of Milk/Manure |
| 5 | 2021-2022 | Rs 2471039.00 | Sale of Milk/Manure |
| **Grand Total** | | **Rs 8787624.05** | |

**Photos related to Gir cow unit established under RKVY Project**


Fig: Milking of cows at automatic milk parlor

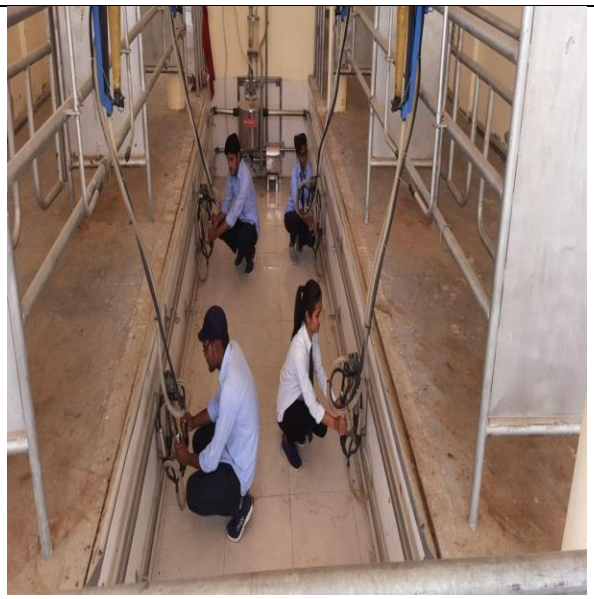


Fig: READY students were imparted training at automatic milk parlor

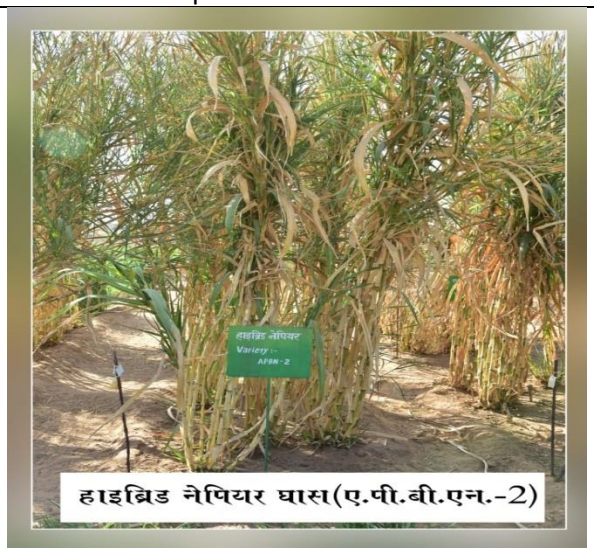




Fig: Visit of Farm Women to forage farm


दुधारू गिर गायो की खिलाई पिलाई


पुंछ से पुंछ पद्धति मे गिर गायो का रखरखाव

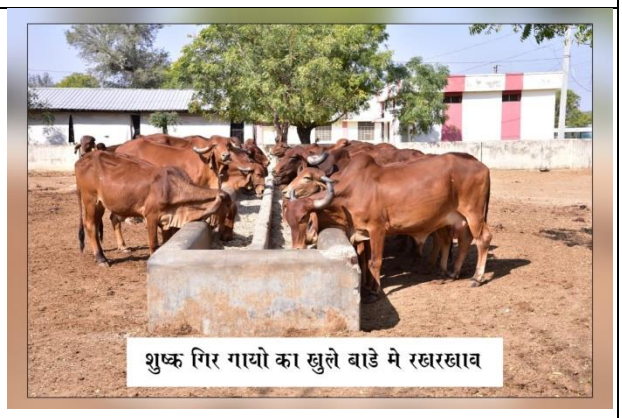

गिर गायो का हस्त दोहन विधि द्वारा दुध निकालना


गिर गायो की युवा बछडियो का रखरखाव


गौ वंश की गिर नस्ल के पशुओ का रखरखाव


शुद्ध गिर नस्ल के बछडो को तैयार कर गौशालाओ व पशुपालको को वितरित करना


युवा गिर बछडे बछडियो की वैज्ञानिक विधि से खिलाई पिलाई


शुष्क गिर गायो का खुले बाडे मे रखरखाव

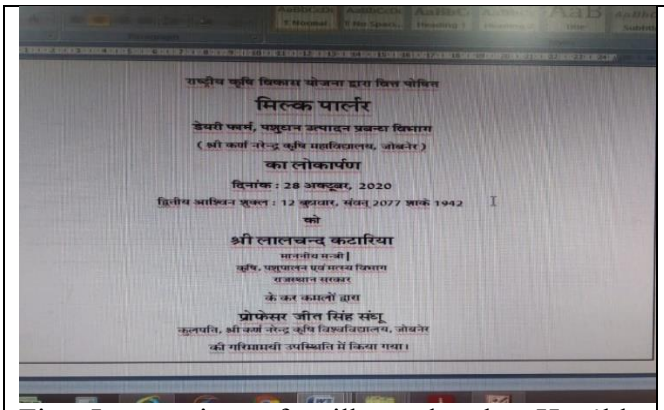



Fig: Inauguration of milk parlor by Hon'ble Minister of Agri.,Animal Husb. and Fisheries


Fig: News of inauguration of milk parlor appeared in local news paper


Fig: Advertisement of availability of Gir cow milk at Dairy Farm


Fig: Advertisement of packed Gir cow milk at Dairy Farm

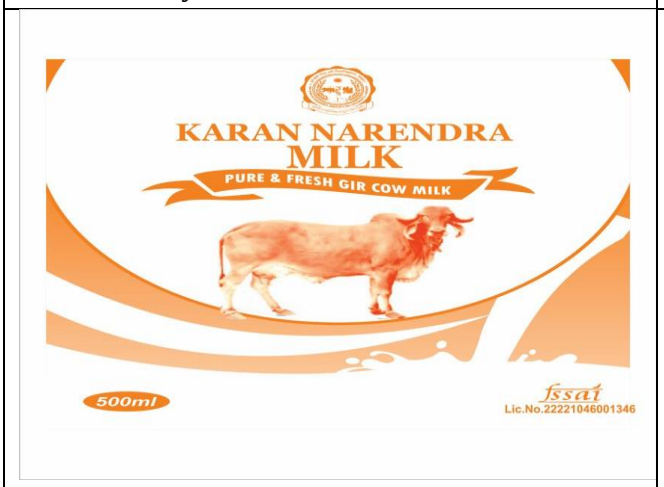



Fig: Gir cow milk was made available with brand name of Karan Narendra Milk

Fig: Packed Gir cow milk at Dairy Farm

Fig: READY students packing Gir cow milk

Fig: READY student were imparted training at automatic milk parlor

Fig: Training on Dairy Farming was imparted to 20 farmers/farm women

डेयरी फार्म उद्यमिता प्रशिक्षण का समापन

न्यूज सर्विस/नवज्योति, जोबनेर। श्री कर्ण नरेंद्र कृषि विश्वविद्यालय के अंतर्गत 25 दिवसीय डेयरी फार्म उद्यमशीलता प्रशिक्षण कार्यक्रम का समापन हुआ। प्रशिक्षण में जयपुर जिले की तीन महिलाओं सहित 20 लोगों ने डेयरी फार्म उद्यमिता का प्रशिक्षण लिया। इस दौरान प्रशिक्षार्थियों को डेयरी के क्षेत्र में हो रहे नवाचार, अनुसंधान की जानकारी दी। प्रशिक्षण प्रभारी एवं विभागाध्यक्ष पशुपालन डॉ. महेशदत्त ने बताया कि प्रशिक्षण का मुख्य उद्देश्य डेयरी यूनिट को लाभकारी बनाने के उत्पाद तैयार करने के साथ-साथ अन्य उत्पाद जैसे वर्मी कंपोस्ट, अजोला घास आदि का उत्पादन भी कर डेयरी को लाभकारी बनाना है। विषय विशेषज्ञों के साथ क्षेत्र के सरकारी संस्थाओं और प्रगतिशील किसानों के द्वारा विकसित की गई डेयरी का भ्रमण करवाया गया। 2-4-2021

Fig: Closing of 25 days Dairy Farming Training

Fig: Visit of Farm Women to Dairy Farm

Fig: Lecture on Dairy Farming to Farmers/farm women

Fig: Discussion on Dairy Farming related questions


Fig: Advertisement for five days training programme

Fig: Inauguration of five day training on Dairy Farming and value added milk products

Fig: Preparation of shrikhand during five day training programme

Fig: Distribution of certificate to participants by Hon'ble Vice-Chancellor

उद्यमिता प्रशिक्षण कार्यक्रम का शुभारंभ

न्यूज सर्विस/नवज्योति, जोबनेर। श्री कर्ण नरेंद्र कृषि विश्वविद्यालय में संचालित राष्ट्रीय कृषि उच्चतर शिक्षा परियोजना के तत्वावधान में सोमवार को मूल्यवर्धित दुग्ध उत्पादों पर छह दिवसीय उद्यमिता प्रशिक्षण कार्यक्रम परियोजना प्रभारी डॉ. एके गुप्ता की अध्यक्षता शुरू हुआ। मुख्य वक्ता डॉ. महेशदत्त विभागाध्यक्ष पशुधन उत्पादन प्रबंधन विभाग ने कहा कि पशुओं से स्वच्छ दूध उत्पादन लेने, मूल्य वर्धित दूध उत्पादों जैसे दूध, घी, पाउडर, खोवा इत्यादि उत्पाद बनाकर व्यवसाय के रूप में अच्छा लाभ अर्जित किया जा सकता है। इस क्षेत्र में कई लोगों को रोजगार दिया जा सकता है। इस दौरान विनोद कुड़ी, पंकज कस्वा, डॉ. निधि त्यागी उपस्थित थे। 30/11/2

Fig: Training on value added milk products was imparted to READY Students

**Impact of project:** Gir cow milk has A2 beta casein protein which has been considered beneficial for human. A2 beta casein present in A2 milk breaks down into amino acids for quick digestion which results in improving overall health and increase the nutritional value derived from Gir cow milk. A2 milk is a rich source of minerals such as calcium, potassium, phosphorus which are necessary for strong bones and teeth, better functioning of muscles, regulation of

blood pressure, tissue and cell growth and enhancing goodcholesterol (HDL) and maintain overall nourishment and well-being of body. Looking to the importance of Gir cow milk and having obtained demonstration and training in Gir cow production, small, marginal farmers and landless labours have established Gir cow units for domestic as well as commercial purposes. Gir breed has been found to be one of the best milch breeds under semi-arid condition of Rajasthan. Under semi arid conditions of Rajasthan Gir breed has been producing good quantity of milk with available feeds/fodders and thriving well. Gir cow has been gaining popularity day by day which will lead to conservation of this breed. Production of Gir cow milk is becoming popular day by day due to its A2 beta casein protein. Customers in cities have been demanding A2 milk due its quality and ready to pay higher prices per litre of milk. In view of conservation and improvement of Gir cow breed, large number of young Gir bulls, cows and heifers have been provided to gaushala, small, medium farmers and landless labours under SKNAU, Jobner jurisdiction.

Fig: Sh Kalraj Mishra,Hon'ble Governer of Rajasthan visited Gir cows at Dairy Farm

Fig: Dr J S Sandhu, Hon'ble Vice-Chancellor visited Gir Cow Project at Dairy Farm

Fig: Visit of Dr A K Singh(DDG)Extension Education and Dr S K Singh,Director ATARI,Jodhpur with Hon'ble Vice-Chancellor, SKNAU, Jobner

Fig: Visit of Dr R C Agarwal, DDG(Education) with Hon'ble Vice Chancellor,SKNAU, Jobner

Fig: Plantation at Newly constructed Gir Cow Unit at dairy farm in presence of Hon'ble Vice-Chancellor & Director Research, SKNAU, Jobner

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