

CHAPTER THREE  
CULTURAL ASPECTS

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- 1 Introduction**
- 2 Land Utilization**
- 3 Agronomic Condition and Cropping Pattern**
- 4 Land-man Ratio**
- 5 Population and Occupational Structure**
- 6 Industrial Development**
- 7 Infrastructural Facilities**
- 8 Distribution of Milch Animals and Veterinary Facilities**
- 9 Summary**

## **CHAPTER-THREE**

### **CULTURAL ASPECTS**

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#### **3.1 Introduction:**

After presenting the physical environment of the region, it is necessary to study the cultural aspects of the region, that is, Warana basin alongwith the agronomic condition. In this chapter the cultural aspects of Warana basin are presented and their correlation with the development of cooperative dairy farming is discussed as all these aspects have a major impact on the progress of dairy farming in the region. The cultural aspects include the land utilization, agronomic condition, land-man ratio, human resources, industrial development and infrastructural facilities.

#### **3.2 Land Utilization:**

Land utilization includes cultivation, forestry and other types of landuses. In Warana basin, factors such as physical, demographic and economic, influence the land utilization pattern. The general landuse pattern of Warana basin is presented in Table 3.1.

It is evident from Table 3.1 that the general landuse of Warana basin includes:

1. Area under forest
2. Area not available for cultivation

3. Waste land
4. Area under cultivation.

**Table 3.1:** Warana basin: general landuse

Sr. No.	Particulars	Area in Sq.Kms.	%
1	Area under forest	335.15	16.00
2	Area not available for cultivation	130.00	6.20
3	Waste land	310.00	14.80
4	Area under cultivation	1319.85	63.00
	Total geographical area	2095.00	100.00

(Compiled by the researcher)

Table 3.1 shows the general landuse pattern of Warana basin which reveals that 16 per cent of the total geographical area of the basin is under forest, 14.8 per cent of the land is classified as waste-land, another 6.2 per cent area is not available for cultivation and 63 per cent of the total geographical area of the basin is under cultivation.

The land utilization pattern of the region is as follows:

(1) Area Under Forest:

Some 335.15 sq.kms. area of Warana basin is under forest, which is only 16 per cent of the total

area of the region. This figure is much lower as compared to that of Maharashtra State. Most of the forest area is in Shahuwadi and Shirala tahsils, that is, the western part of the region. The area under forest decreases from west to east.

(2) Area Not Available for Cultivation:

The percentage of land not available for cultivation is 6.2. As compared to the State it is slightly less. Some 130 sq. kms. of the area of the region is not available for cultivation. This area is used for non-agricultural activities such as settlement, industry, roads, reservoir and many other activities.

(3) Waste Land:

Some 310 sq. kms. area is under waste land which is 14.8 per cent of the total geographical area of the basin. The waste land is more in the western part of the region. In Shahuwadi and Shirala tahsils more than 40 per cent area is classified as waste land. The percentage of waste land decreases from west to east. In the eastern part of the basin 5 to 7 per cent of the land is classified as waste land.

(4) Area Under Cultivation:

Some 1,319.85 sq. kms. area is under cultivation in Warana basin, which is 63 per cent of the total area of the region. This

is slightly less as compared to the land under cultivation in Maharashtra State which is 64 per cent. The area under cultivation decreases from east to west. In the western part of the basin due to rough and rugged terrain, steep slopes, poor quality of soils, thick forest cover and very heavy rainfall, the percentage of area under cultivation is considerably low. In the central and eastern parts of the basin owing to the fertility of the soils and irrigation facilities, the percentage of area under cultivation is fairly high.

### **3.3 Agronomic Condition and Cropping Pattern:**

Agriculture plays a vital role in the economic development of Warana basin. Agriculture provides food to the people and supplies raw material for the industrial development. It also provides fodder for the bovine population of the region. Agriculture is a main source of livelihood for the farmers in the basin. Animal husbandry and dairy farming play an important supporting role in the life of farmers and landless labourers in the region.

#### **(A) AGRONOMIC CONDITION:**

The physiography, climate and pedological conditions in the region have a great influence on the agronomic condition of Warana basin. Altitude, slopes, soils, temperature and rainfall are the factors which are

not equal in all parts of the basin. Taking into consideration various physical and agricultural factors the region can be sub-divided into three distinct agronomic zones. They are:

(1) Western Zone:

This zone includes the western hilly region of the basin, especially the part of Shahuwadi and Shirala tahsils. The characteristic features of this zone are rugged relief steep slopes, unfertile laterite soils of poor quality and heavy rainfall. This zone is also characterized by heavy erosion. There is absence of irrigation facilities which has limited the agricultural activities to the rainy season only. The agriculture is of subsistence type. Rice and millets are the important crops taken in this zone. Millets and especially Vari and Nachani are grown on the upper terraces whereas paddy fields are located on the lower terraces and valley floor. There are very small patches of land under sugarcane cultivation, which are on the either sides of Warana river and its major tributaries. In general, the agronomic condition of this region is very hard and unfavourable.

(2) Middle Zone:

Middle zone includes the central part of Warana basin and covers the northern part of Panhala and

Hatkanangale tahsils and southern part of Walwa tahsil. This zone is characterized by small hills with gentle slopes, red-brown to black soils on either sides of the streams. The rainfall in this region is nearly 100 Cms. to 150 Cms.. The region has well developed irrigation facilities, especially by lift irrigation and well irrigation. The irrigated area is used for food and fodder crops. The main crops of the region are rice, jowar, wheat, sugarcane and vegetables. The agronomic condition of this zone has been improved since the inception of Shree Warana Cooperative Sugar Factory Ltd., Warananagar.

(3) Eastern Zone:

This zone comprises the northern part of Hatkanangale and Shirol tahsils and southern part of Miraj tahsil. The zone covers the eastern triangular part of the basin. This basin is characterized by plain region flanked by small hills with gentle slopes and fertile soils ranging from light black in the foothill region to deep black near the river. The forest cover is in the form of sparse woods, restricted to the hilly part and bordering the streams. The soil is rich and fertile but the rainfall is considerably low and it is less than 75 Cms.. Due to the well developed irrigation facilities, the agronomic condition in this



zone is most favourable of all the zones. The important crops in this zone are sugarcane, jowar, groundnut, gram, cotton, wheat and chillies. Wheat and gram are the main rabbi crops in this zone.

In all the three zones the agronomic conditions are different and they have direct influence on the dairy farming activities. In the fringes of western zone due to the harsh agronomic condition dairy farming is not well developed. However, in middle and eastern zone the development of agriculture and dairy farming are most progressive.

(b) CROPPING PATTERN:

Table 3.2: Warana basin: Area under important crops (1990-91)

Sr.No.	Item	Area in Hect.	% to net sown area
1	Jowar	46,171.0	35.0
2	Groundnut	23,730.0	18.0
3	Sugarcane	11,607.2	8.8
4	Rice	8,577.5	6.5
5	Gram	5,276.0	4.0
6	Chillies	2,238.3	1.7
7	Cotton	2,005.0	1.5
8	Wheat	1,980.0	1.5
9	Tobacco	1,950.0	1.5
10	Other crops	28,365.0	21.5
	Net sown area:	1,31,900.00	100.0

(Compiled by the researcher)

Table 3.2 shows the cropping pattern in Warana basin. It is clear from the table that Jowar and rice are the major food-crops grown in the region, whereas sugarcane is important cash-crop. Groundnut is important oilseed grown in the region. The table reveals that the net area sown is 1,31,900 hectares. The Kharif crops include rice, jowar, chillies, groundnut,, whereas wheat and gram are the major rabbi crops. Sugarcane is grown throughout the year.

The table reveals that nearly 35 per cent of the net sown area is under jowar, followed by rice (6.5 per cent) and gram (4 per cent). Amongst the cash crops sugarcane ranks first with 8.8 per cent of the net sown area and is followed by chillies (1.7 per cent) and cotton (1.5 per cent). Groundnut is the major oilseed in the region which covers 18 per cent of the net sown area. It is Kharif crop in the basin. However, the deep black soil on either sides of Warana river is good for rabbi groundnut also.

Jowar, groundnut, rice, wheat, Bajari, gram, maize, chillies and other foodcrops account for 88.2 per cent of the net sown area. Sugarcane, cotton, tobacco are the cash crops which together account for 11.8 per cent of the net sown area.

Maize and other fodder crops are also grown throughout the basin and they are used mainly as fodder for the bovines.

The spatial distribution of the crops is very uneven in Warana basin. But certain trends can be generalised regarding the distribution of the crops. The longitudinal section of the basin shows that the western zone grows rice, Nachani, Vari; the middle zone grows Jowar, pulses, rice and sugarcane. Jowar, pulses, chillies, sugarcane, wheat and tobacco are the important crops grown in the eastern zone of the basin. Tobacco and cotton are confined to the easternmost flanks of the basin.

The transverse cross-section of the basin, that is, from Ashta hill to Panhala-Jotiba hills indicates different types of distribution of crops. For example, sugarcane is predominant near Warana basin, followed by a belt of food-crops such as Jowar, groundnut, pulses, rice etc.. The hilly slope away from the river is under rice, Nachani, groundnut and other oil-seeds. The same cropping pattern is seen on the either sides of Warana river.

#### **3.4 Land:Man Ratio:**

The extent of land available to population

depending on it for their livelihood is an important desideratum in considering the land as resource.<sup>1</sup>

**Table 3.3:** Warana basin: Land-man ratio (1991)  
(Land in hectares)

Sr. No.	Zone	Tahsil	Land available per person	
			Tahsilwise	Zonewise
1	Western	Shirala	0.26	0.2558
		Shahuwadi	0.25	
2	Middle	Walwa	0.10	0.11
		Panhala	0.12	
		Hatkanangale	0.11	
3	Eastern	Walwa	0.10	0.10
		Miraj	0.09	
		Hatkanangale	0.10	
		Shirol	0.11	
Warana basin:			0.15	

(Compiled by the researcher)

Table 3.3 indicates the land-man ratio in different zones in Warana basin. For working out the land-man ratio the population statistics according to 1991 census is taken into consideration. The land resource is an important natural wealth of Warana basin. The table reveals that the land available per head is only 0.255

hectares in the western zone of the region. It is 0.11 hectares in the middle zone and 0.10 hectares in the eastern zone. Thus, it is clear that the per capita land available decreases from west to east and is almost less than half in the eastern part of the basin compared to that in the western part. The average availability of land per person is 0.15 hectares in the region. If only cultivated land is taken into consideration, per capita availability of land in Warana basin is 0.10 hectares only.

In the western hilly region even the per capita availability of land is lower. The entire region is hilly with rough terrain and is mainly under forest. The proper utilization of land in Warana basin is a matter of utmost concern to the people of Warana basin. In the part of basin where the techniques have been devised for better treatment of the soil and better techniques of cultivation, the yields have increased to sustain a higher land-man ratio.<sup>2</sup>

From the interpretation of Table 3.3 it is clear that agricultural land available per person is meagre in Warana basin. This clearly shows the necessity of a subsidiary occupation to support the economy of the people of Warana basin and physical and cultural environmental factor being favourable for dairy farming, no

other but dairy farming is the only possible subsidiary occupation for the rural people in Warana basin.

### **3.5 Population and Occupational Structure:**

Agriculture is the main occupation in the Warana basin. The farmers and landless labourers in the region are engaged in animal husbandry and dairy farming. The people are also engaged in industries, transportation and other occupations. The total population of Warana basin is 5,42,283 according to 1991 census and the total working population is 2,12,140. Of the total working population 63 per cent people are engaged in agriculture and the remaining 37 per cent are engaged in other activities. The percentage of population engaged in agriculture is divided into three different zones of the basin. In the western zone the population engaged in agricultural activities is 65 per cent. In the middle zone the percentage decreases to 60 and it is slightly higher, that is, about 62 per cent in the eastern zone. In the western zone due to the absence of industrial development most of the people are engaged in primary activities. In the middle and eastern zones of the basin due to the industrial development the percentage of people engaged in agriculture decreases considerably. Out of 63 per cent people engaged in agriculture, 47 per cent are farmers and the remaining 16 per cent

are  
| landless labourers. For these 16 per cent people, that is, the landless labourers, dairy farming has proved an important means of livelihood.

### 3.6 Industrial Development:

Warana basin was not having any kind of industrial background till the inception of Warana Cooperative Sugar Factory in the year 1959. With the establishment of sugar complex, development of the region in agro-based industries was accelerated. The sugar industries in the region include Warana Cooperative Sugar Factory, Warananagar and Vishvas Cooperative Sugar Factory, Yashwantnagar. Since the establishment of these cooperative sugar factories, there is a rapid development of industries in the region. These industries include, Warana Cooperative Dairy, Warana Fodder and Mash Factory, Amrutnagar. There are a number of small-scale industries in the basin which include Warana Paper Factory, Manugraph Industries Ltd., Cement Pipe factories at Warananagar and at Wadgaon Oil Mill at Wadgaon, Spinning unit at Wadgaon and rice-flour mill, saw mill and tanning factory. The total number of small-scale units in the region is 250.

The industrial development is mainly confined to the middle and eastern zones of the basin. The western zone is backward in industrial development. There are

many physical hurdles in the development of industries in this part of the basin. This indicates that cooperative dairy farming can be an important enterprise for the people in western industrially backward zone, where the conditions are not favourable for the development of other industries.

### **3.7 Infrastructural Facilities:**

It is necessary to present the set of infrastructural facilities available in the study region. Dairy farming needs well developed infrastructural facilities as a pre-requisite. Milk being a perishable commodity, it needs rapid transportation facilities.

#### **(1) Roads:**

The primary cooperative dairy societies collect milk in various villages and transport it to the processing plants at Warananagar, Gokul Shirgaon and Islampur. It is possible only because of a well developed network of motorable roads. Very small section of National Highway No. 4 traverses through the eastern part of the basin in north to south direction. All other roads are parallel to Warana river, like Hatkanangale-Amba State Highway (upto Ratnagiri) and Islampur-Waranawati State Highway. All other district and village roads are connected to these two roads. All these roads are motorable throughout the year. The road facilities



are well developed in the middle and eastern zones. In the western zone, due to difficult terrain and steep slopes motorable roads are very few. Especially during the rainy season there are difficulties in reaching the villages in remote hilly parts. However, most of the villages in the basin are accessible by trucks and tempos. Thus, there are no difficulties in collecting milk.

(2) Banking Facilities:

Dairy farming needs credit facilities, because from the primary milk producers' level at the bottom to the cooperative milk union at the top level, loan facilities are necessary. Warana basin shares Sangli district in the north and Kolhapur district in the south. The northern part of the basin is served by the branches of Sangli District Cooperative Bank and southern part of the basin is served by the branches of Kolhapur District Cooperative Bank. Many branches of Bank of India also provide loan facilities for the development of dairy farming. Warana Cooperative Milk Union is financed by Bank of India. The other financing institutions are, Warana Bank, Bank of Maharashtra, rural and urban cooperative societies.

(3) Cattle Insurance:

Facilities for cattle insurance are recently

available at all places in Warana basin. Thus, the risk is covered by various insurance companies. All the milch animals purchased with the help of bank loan are insured.

(4) Training:

Even though the activities of dairy farming are the traditional activities in the region, modern dairy farming has scientific activities and need basic training at various stages. The cooperative milk union organised training for the milk producers and the office-bearers of the cooperative dairy societies.

(5) Market:

The entire bulk of milk procured is collected by three major cooperative milk unions in the region. The milk from the parts of Shirala and Walwa tahsils is collected by Rajaram Bapu Patil Cooperative Doodh Sangh, Islampur. Milk from Shahuwadi tahsil is collected by Kolhapur Milk Cooperative Federation, Kolhapur and milk from the middle and eastern zones of Warana basin is collected by Warana Sahakari Doodh Utpadak Sangh Ltd., Amrutnagar. The processed milk and milk products manufactured at three co-operative milk unions is marketed in various urban centres in Kolhapur and Sangli districts. The major bulk of milk is sent to Bombay. Thus, there is no problem in marketing of the milk procured in

Warana basin.

As a result of the establishment of two major cooperative sugar complexes in the region, there exists well developed network of communication facilities including Post and Telegraph, Telephone, Telex etc.. All these facilities help in the development of dairy farming in the Warana basin.

### **3.8 Distribution of Milch Animals and Veterinary Facilities:**

It is necessary to present the distribution of milch animals in the study region for a proper perception of the dairy farming. The distribution of particular breeds of milch animals in different parts of the region has resulted in the present milk production structure and milk potential of the region. There are two important aspects of the distribution of milch animals in Warana basin. The first is that the distribution is influenced by the geographical factors to a great extent and secondly there is a large number of unproductive milch animals, which are not killed for religious reasons. This has ultimately resulted in decreasing average milk yield in the region. Geographical distribution of milch animals alongwith the veterinary facilities in the region, provides a base for the study of dairy development in the region.

The cows in the region are mainly of Khillar, Krishna valley and Jawari types. The milk yield per day varies from 1.5 to 2.0 litres in the case of Khillar types. It is above 2 litres in the case of Krishna valley cows. The buffaloes in the region are mainly Jawari and Pandharpuri types with a greater variation of milk yield per day. In the middle and eastern zones there are large numbers of Murrah and Mehasana buffaloes.

In 1982 bovine population of the region was 1.45 lakhs, out of which nearly 62 per cent were the milch animals in milk. The number of milch animals in milk was 90 thousand. The next livestock census shows a considerable increase in both number of animals and number of milch animals in the region. The figures compiled and calculated show that in 1987 the total number of bovine population was 1.47 lakhs, out of which nearly 77 per cent, that is, 1.13 lakhs were milch animals in milk. Table 3.4 shows the distribution of milch animals in Warana basin.

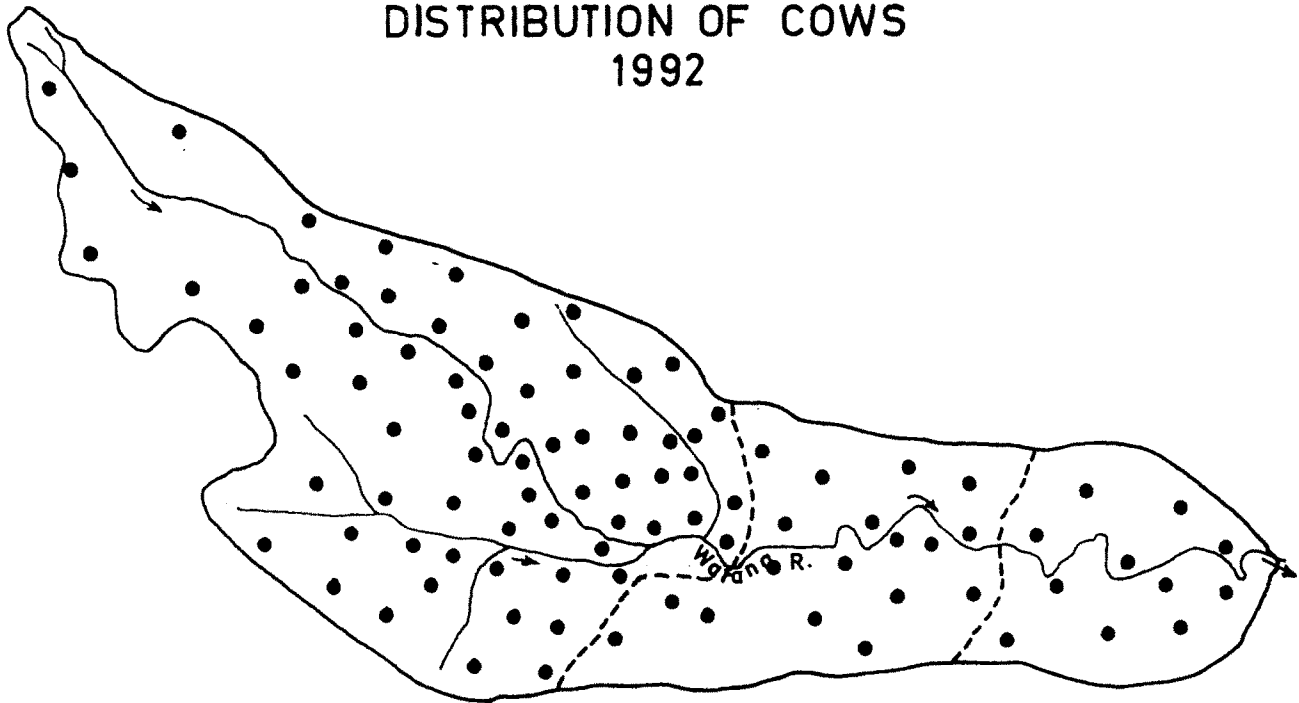
Table 3.4 reveals that the western zone with heavy rainfall ranks first in the number of milch animals with 70,690 milch animals in the zone. Out of these, nearly 46.2 per cent, that is, 32,650 were cows and nearly 53.8 per cent, that is, 38,040 were buffaloes.

**Table 3.4: Warana basin: Zonewise distribution of milch animals (1992)**  
(Figures in the brackets show percentage)

Sr. No.	Zone	C o w s			B u f f a l o e s			Total milch animals in the zone & percent-age
		Local	Cross breed	Total	Local	Mehasana & Murrah	Total	
1	Western	13,160 (18.6)	19,490 (27.6)	32,650 (46.2)	34,020 (48.1)	4,020 (5.7)	38,040 (53.8)	70,690 (62.8)
2	Middle	1,352 (5.2)	7,688 (29.4)	9,040 (34.6)	14,456 (55.3)	2,644 (10.1)	17,100 (65.4)	26,140 (23.2)
3	Eastern	559 (3.6)	4,940 (31.4)	5,499 (35.0)	8,185 (52.0)	2,046 (13.0)	10,231 (65.0)	15,730 (14.0)

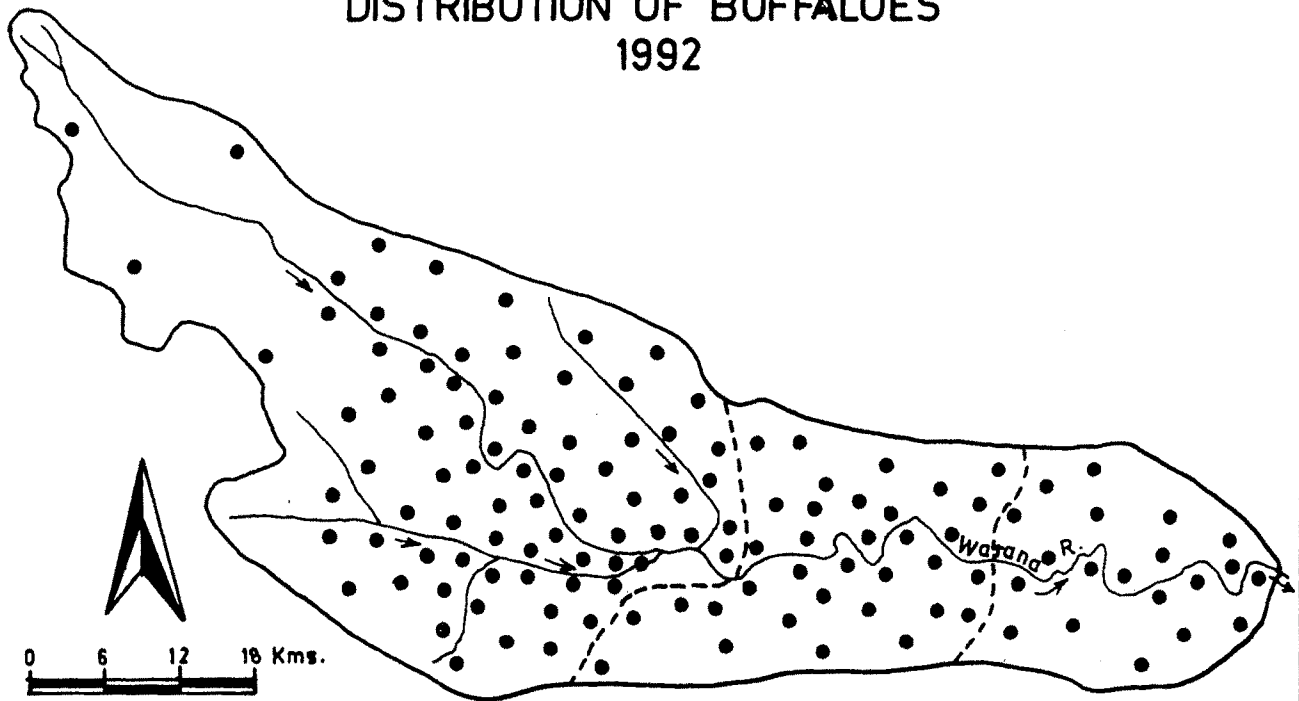
(Compiled by the researcher)

WARANA BASIN  
DISTRIBUTION OF COWS  
1992



● = 500 COWS

DISTRIBUTION OF BUFFALOES  
1992



● = 500 BUFFALOES

----- ZONE BOUNDARY

Map 3-1

Out of the total cows in this zone 18.6 per cent were of local breeds and 27.6 per cent were cross-bred. The percentage of local buffaloes to total buffaloes in this zone was 48.1 and that of Mehasana and Murrah buffaloes was 5.7. Out of the total milch animals in Warana basin 62.8 per cent milch animals are in the western zone.

In the middle zone the total number of milch animals was 26,140, of which 34.6 per cent, that is, 9,040 were cows and 65.4 per cent, that is 17,100 were buffaloes. Out of the total cows, 5.2 per cent were of local varieties and 29.4 per cent were cross-bred varieties. In the case of buffaloes, 55.3 per cent were of local breeds and the remaining 10.1 per cent were of Mehasana and Murrah breeds. The central zone accounts for 23.2 per cent of the total milch animals in Warana basin.

In the eastern zone, the total number of milch animals was 15,730 which is considerably low as compared to the western zone. Out of the total milch animals in this zone, 5,499, that is, 35 per cent were cows and 10,231, that is, 65 per cent were buffaloes. Out of the total cows in this zone 3.6 per cent were of local breeds and 31.4 per cent were of improved breed. Thus, it is clear that the highest percentage of cross-



1: Mehasana buffaloes: A scientific rearing at Kodoli



2: Holstein cow: Talsande village





3: Warana Dairy: Amrutnagar



4: Warana Dairy: Procurement of milk





5: Warana Feed Factory: Amrutnagar



6: Use of sugarcane tops as fodder: Kodoli



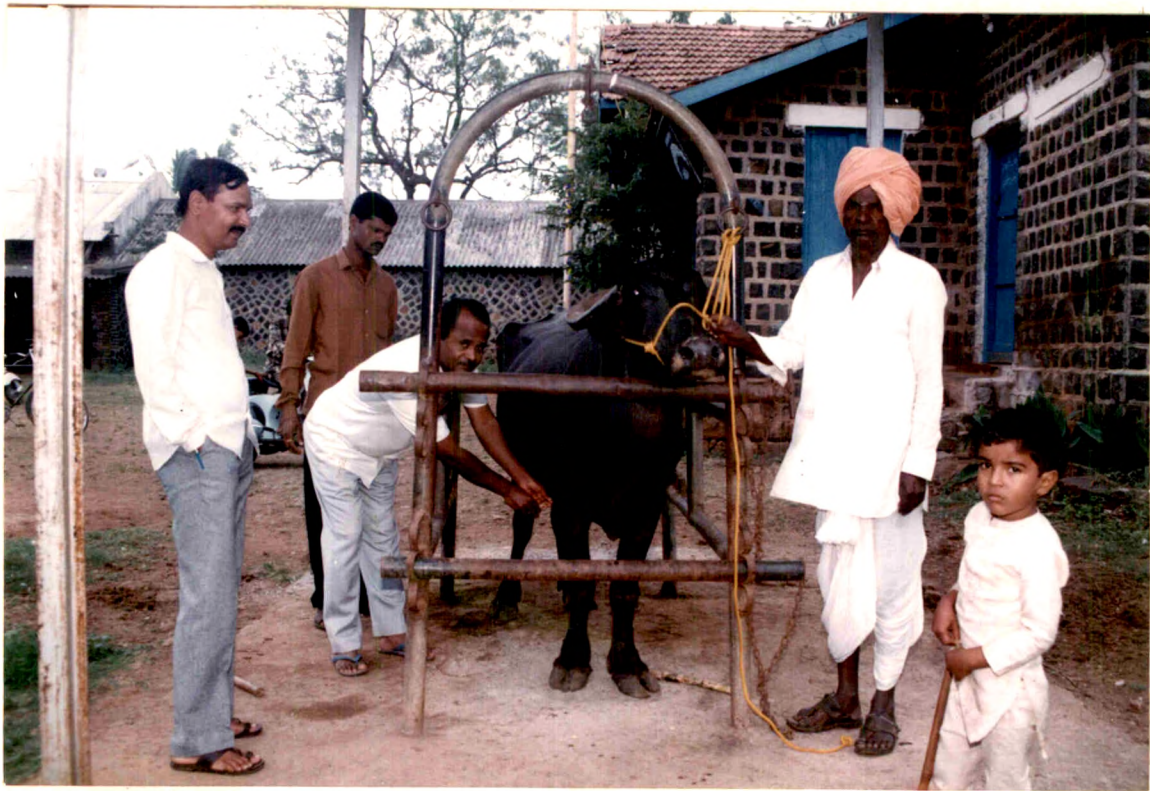


7: Transportation of milk: Kodoli



8: A view of the milk producers' cooperative society, Kodoli





9: Veterinary aid centre: Kodoli



10: A view of the milk producers' cooperative society: Dongarwadi

bred cows was in the eastern zone. Out of the total buffaloes, 52 per cent were of local breeds and 13 per cent were of improved breeds. Thus, it is clear that the percentage of improved buffaloes is also the highest in the eastern zone. This is mainly due to the improved economic status of the farmers in the eastern zone. The total number of milch animals in Warana basin in 1987 was 1,12,560 out of which 47,189, that is, 42 per cent were cows and 65,371, that is, 58 per cent were buffaloes.

It is clear from the above details that the western zone has larger number of cows and buffaloes alongwith cross-bred varieties. This is mainly due to the geographical factors and presence of pastures in the zone. However, due to the peculiar shape of Warana basin, the width and the area of western zone is more, as a result of which density of milch animals is less in this zone and it increases towards eastern zone.

#### Veterinary Facilities:

The veterinary aid is mainly provided through the veterinary dispensaries, veterinary aid centres, and artificial insemination centres in the region. In addition to this cattle houses and mobile veterinary dispensaries also extend the necessary facilities.

The cooperative milk unions in the region provide all necessary veterinary facilities to the members. There is a well-developed veterinary infrastructure in the region which is mainly set up by the State Government agencies.

The cattle house facilities are available at Shahuwadi and Wadgaon. Warana dairy has established a good network of veterinary facilities in the basin with veterinary dispensaries at Amrutnagar, Bhendawade and Sarud. There are 26 artificial insemination centres established by Warana dairy in the region.

Table 3.5: Warana basin: Veterinary facilities (1992)

Sr. No.	Zone	Dispensary	Aid centre	A.I. centre
1	Western	7	10	24
2	Middle	6	9	15
3	Eastern	2	4	9
	<u>Total:</u>	<u>15</u>	<u>23</u>	<u>48</u>

Table 3.5 shows the veterinary facilities in Warana basin. Most of the veterinary facilities are in the western zone owing to its large size and large number of milch animals.

In 1992 there were 15 veterinary dispensaries,

23 aid centres and 48 artificial insemination centres in the region.

### **3.9 Summary:**

Taking into consideration the cultural aspects, it is clear that all these aspects are favourable for the development of dairy farming in Warana basin. Nearly 50 per cent of the waste land, especially in the western zone is under good quality of grass. Nearly 63 per cent of the area is under cultivation, which is another way to provide green fodder to the milch animals. Agronomic condition of the western zone is not suitable for the commercial cropping, but provides good base for the development of dairy farming. The middle and eastern zones are highly developed in commercial cropping and are having more irrigation facilities. Sugarcane is the main crop. Sugarcane tops are used for feeding the milch animals. In the entire basin only 0.15 hectares of land per capita is available, which is not sufficient for survival of the rural folk, if it is used for the production of crops. The infrastructural facilities such as transportation, banking, insurance, training, marketing etc. are well developed in the region. All the above factors indicate the need for the development of dairy farming as a subsidiary occupation in the region and the people in the basin have taken up dairy farming as their subsidiary occupation with great

enthusiasm.

From the point of view of overall development it is observed that the eastern part of the basin is relatively more developed than the western hilly part. This is mainly due to the fertile soils, availability of irrigation facilities, inception of cooperative sugar factory and development of infrastructural facilities. The western zone has many hurdles in the economic development - natural, economic, industrial infrastructural and demographic.

#### NOTES AND REFERENCES

- 1 Vocational Survey of Kolhapur District, Government of Maharashtra, Bombay (1980), p. 22.
- 2 Economic Geography, J.W. Alexander, University of Wisconsin, Primitive Subsistence Activities, p. 44.