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# COMPREHENSIVE EXAMINATION OF ANIMAL HUSBANDRY ON A GLOBAL SCALE, EMPHASIZING THE CONTEXT OF INDIA

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## ABSTRACT

Livestock and animal husbandry continue to play a crucial role in sustaining rural livelihoods, particularly in the Least Developed Countries (LDCs) and developing nations such as India. This sector exhibits substantial growth potential globally and serves as a major source of gainful employment worldwide. Against this backdrop, the present study aims to assess the performance of animal husbandry from a global perspective.

The primary objectives of the study include examining the positioning of countries in the global livestock population, scrutinizing the cattle livestock population in selected nations, evaluating trends in the overall global livestock population, and analyzing the trajectory of milk production in both Asian countries and worldwide. The investigation relies on secondary data extracted from various national and international reports, with the study period spanning from 2007 to 2017.

**Key words**: Animal Husbandry, Livestock Population, Milk Production, India and Asian Countries

## 1. Introduction

In an agrarian-based economy like India, a significant portion of the rural workforce is engaged in agriculture and related activities. According to the 2011 census, approximately 54.6 percent of India's total population was involved in the agricultural sector, highlighting the substantial dependence of the rural masses on agriculture. This scenario is not unique to India, as many developing and underdeveloped nations rely heavily on the agricultural sector for livelihoods.

These countries face challenges such as a lack of technological development, limited industrial progress, low educational levels, inadequate infrastructure, and a high dependence on imports. Consequently, these economies often find themselves trapped

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in debt cycles, grappling with chronic poverty, low human development indices, and a scarcity of capital. This predicament leads to a stagnant state of the economy, characterized by a persistent reliance on agriculture and related activities.

Against this backdrop, this study endeavors to assess the global perspective of animal husbandry performance. The primary objectives include examining the positioning of countries in terms of world livestock population, scrutinizing the cattle livestock population in selected nations, evaluating the global trend in total livestock, and analyzing the milk production trend in Asian countries and worldwide. The investigation relies on secondary data obtained from various national and international reports, focusing on the period from 2007 to 2017.

**1.2 STATEMENT OF THE PROBLEM:**

Animal husbandry stands at the intersection of global agricultural practices, economic livelihoods, and sustainable food production. As the world faces evolving challenges in meeting the demands of a growing population, a comprehensive examination of animal husbandry practices on a global scale becomes imperative. This study seeks to emphasize the context of India within this broader examination, addressing critical issues and questions surrounding the global and Indian animal husbandry landscape.

This study aims to address these critical questions through a comprehensive examination of animal husbandry practices on a global scale, with a special emphasis on the contextual intricacies within India. By delving into these key aspects, the research endeavors to offer a nuanced understanding of challenges, opportunities, and potential pathways for enhancing the sustainability and efficiency of animal husbandry practices, contributing to informed decision-making in both global and Indian contexts

3. **Objectives of the Study**

The major objectives of the present investigation are as below.

1. To study the positioning of the countries in world livestock population.
2. To study the world cattle livestock population in selected countries.
3. To study the trend in total world livestock
4. To analyze the trend in milk production in the Asian countries and world

**4 RESEARCH METHODOLOGY**

For the present research study secondary data have been collected through various sources of data collection. This study is descriptive. Present study has been conducted

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to identify animal husbandry on a global scale.. The sources of data collection are given below.

**4.1 Data collection:**

The present study is based on secondary data as given below.

**4.2 Secondary Data:**

The secondary data has been collected through the annual reports of animal husbandry and various records maintained by Indian government . The secondary data has also been collected from various reports published by the Indian government, various government committee reports related to animal husbandry on a global scale. The various books, research articles, published and unpublished M. Phil. dissertations and Ph. D. theses, minor and major project reports, census reports, various websites, etc. are also considered.

**4.3 Analysis of the Data:**

**4.3.1 Method of Data Analysis:**

The secondary data have been analyzed through descriptive statistical tools and techniques. In descriptive statistics such as rank, percentage,Mean, S.D, CV are used and software's like MS-Word, MS-Excel, and SPSS have been used for data processing and tabulation. The researcher has used parameters such as Livestock Populationand milk productions in Indian and abroad.

**5 SIGNIFICANCE OF THE STUDY:**

Present study is significance to the to Global Food Security, Economic Impact ,Livelihoods and Rural Development, Environmental Sustainability, Technology and Innovation, Policy Formulation and Regulation, Trade and Market Dynamics, Disease Control and Biosecurity, Climate Change Mitigation,

Sustainable Agriculture Practices. comprehensive examination of animal husbandry on a global scale provides insights that are essential for addressing global challenges related to food security, economic development, environmental sustainability, and public health. It informs policies, practices, and innovations that contribute to a more resilient and sustainable global agricultural system.

**6 SCOPE OF THE STUDY**:

The scope of the present study is classified into the following four elements.

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**6.1 Topical Scope:**

The topical scope of the present study is to examine the animal husbandry on a global scale.. Hence it is entitled as study of comprehensive examination of animal husbandry on a global scale, emphasizing the context of India

**6.2 Geographical Scope:**

The geographical scope of the present research study is the India and aboard ( Brazil China, EU, Argentina, Australia, Russia, Mexico, Turkey, Canada etc.

**6.3 Analytical Scope:**

The analytical scope consists of animal husbandry on a global. For analysis of data, the researcher has used different dimensions such as mike, animal population of Indian and aboard. The researcher has used MS-Excel, MS-Word, and SPSS. And rank, percentage, Mean, S.D, CV are calculated.

**6.4 Periodical Scope:**

It examination of animal husbandry on a global scale has been studied from 2007-to 2017.

**7 LIMITATIONS OF THE STUDY:**

1) This study is limited to selected samples.

2) This study limited to the time period 2007 to 2017.

**8. Global Overview of Animal Husbandry**

**8.1 Position of Countries in world Livestock Population**

Agricultural development in Least Developed Countries (LDCs) faces challenges, with many of these nations lagging behind in intensive farming practices. Countries such as Congo, Zimbabwe, Burundi, Liberia, Eritrea, Niger, Afghanistan, and Nepal exhibit underdeveloped animal husbandry sectors. Despite this, agriculture and animal husbandry remain primary sources of national income for these nations, with a significant portion of the rural population engaged in the primary sector.

In contrast, agriculturally advanced nations like Israel, Denmark, the UK, USA, Brazil, Indonesia, China, and India are at the forefront of animal husbandry, excelling in the production of milk, meat, and wool. While the contribution of agriculture and animal husbandry to the GDP of these nations is decreasing proportionally, the absolute contribution is on the rise.

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Agriculture, as the world's oldest and largest primary industry, plays a crucial role in the economic life of developing countries. It sustains a substantial portion of the global population, providing essential necessities such as food, clothing, and shelter. Animal husbandry further contributes to human well-being, playing a dynamic role in the economies of many developing countries. Livestock products, including milk and meat, offer high-quality nutrition, constituting about two-fifths of the value of the world's agricultural output.

Amidst global challenges, agriculture and animal husbandry play a pivotal role in mitigating malnutrition, a pervasive issue exacerbated by population growth outpacing food production. Animal rearing not only contributes to health but also serves as a significant source of power. The FAO Agricultural Engineering branch underscores the importance of animal power, particularly in countries like India, Mexico, Brazil, and South Africa, where it remains crucial for small-scale farmers.

The vast network of animal husbandry extends across rural and urban areas, both within countries and internationally. International organizations, such as the United Nations International Children's Emergency Fund (UNICEF), have played a pivotal role in motivating developing countries, including India, to establish and develop their livestock industries. These efforts contribute to addressing malnutrition and promoting sustainable agricultural practices globally. The position of countries in world livestock population is show in the following table.

**Table 1**

**Position of Countries in world Livestock Population**

| Livestock Population | First Rank Country in World | India's Position in World |
|---|---|---|
| Cattle | Brazil | 2nd |
| Buffalo | India | 1st |
| Sheep | China | 2nd |
| Goat | India | 1st |
| Camel | Somalia | 9th |

**(Source**: BAHS (GOI), 2017)

Table 1 clearly indicates that India holds the top position globally in the livestock population of goats and buffaloes. Meanwhile, China takes the lead in the

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livestock population of sheep, and Brazil secures the first position in the cattle population. Additionally, Somalia occupies the first position in the world for camel population. India secures the second rank in the total world cattle and sheep livestock population, while it holds the ninth position in camel population. Overall, India maintains a substantial presence in the global average livestock count.

**8.2 Worldwide Cattle Livestock Population**

The largest number of bovine animals were observed in China (677 million) followed by the US (470 million) and France (440 million).

**Table 2**
**Worldwide Cattle Livestock Population in Selected Countries (Thousand head)**

| Sr.No | Countries | Cattles Numbers | Percentage |
|---|---|---|---|
| 1 | India | 303350 | 30.39 |
| 2 | Brazil | 226045 | 22.64 |
| 3 | China | 99173 | 10.3 |
| 4 | EU | 89250 | 8.94 |
| 5 | Argentina | 53815 | 5.36 |
| 6 | Australia | 26142 | 2.78 |
| 7 | Russia | 18568 | 1.85 |
| 8 | Mexico | 16490 | 1.65 |
| 9 | Turkey | 14091 | 1.41 |
| 10 | Canada | 12065 | 1.21 |
| 11 | Others | 43790 | 4.38 |
| **World** | | **998313** | **100** |

(**Source**-FAS/USDA 2016)

**Note**- Other countries indicate the countries Vietnam, Bangladesh, Iraq, Iran, Malaysia, Taiwan, Portuguese, Rumania, Bulgaria, Italy etc.

In terms of sheep population, Argentina takes the lead with 1.15 million, followed by the UK with 0.89 million and Italy with 0.7 million. For pig population, China stands out with 215 million, followed by France with 184 million and Germany with 144 million. In Africa, Tanzania is recognized for its livestock, securing the third position after Sudan and Ethiopia in terms of livestock population according to the Central Statistical Organization (2017).

India holds a notable position, maintaining approximately 10.71 percent of the world's livestock population, as reported by the Central Statistical Organization in 2017. Referencing Table 2 and Figure 1, they illustrate the global cattle livestock population in 2017.

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**Figure 1 Cattles Numbers in Major Countries**

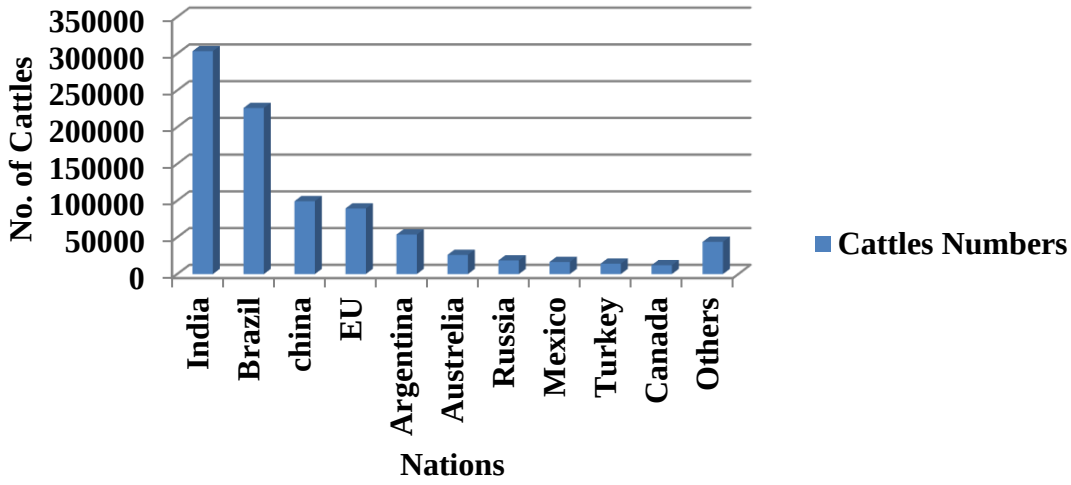


Table 2 illustrates the cattle population in various selected countries worldwide. In the year 2017, the global cattle population reached 998,313 head. India, Brazil, and China emerged as the top contributors to the world's cattle count, accounting for 30.39 percent, 22.64 percent, and 10.3 percent, respectively. In contrast, Russia, Turkey, and Canada recorded the lowest shares of cattle population at 1.85 percent, 1.41 percent, and 1.21 percent, respectively.

### 8.3 Trend in Total World Livestock

The table 3 shows the species wise livestock population in the world.

**Table 3**

**World's Livestock Population (million stock)**

| Sr. No | Years | Cattle | Buffalo | Sheep | Goat | Horse and Ponies | Donkey | Pig | Camels and Mules |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2007 | 1357 | 182 | 1105 | 836 | 59 | 7.5 | 921 | 35 |
| 2 | 2008 | 1372 | 185 | 1086 | 864 | 58 | 7.5 | 938 | 36 |
| 3 | 2009 | 1382 | 188 | 1071 | 868 | 59 | 7.8 | 941 | 36 |
| 4 | 2010 | 1428 | 194 | 1084 | 920 | 58 | 7.8 | 965 | 33 |
| 5 | 2011 | 1451 | 190 | 1139 | 959 | 60 | 7.9 | 969 | 38 |
| 6 | 2012 | 1463 | 192 | 1159 | 975 | 59 | 8.03 | 971 | 37 |
| 7 | 2013 | 1465 | 193 | 1183 | 991 | 59 | 8.14 | 977 | 37 |
| 8 | 2014 | 1475 | 194 | 1196 | 1011 | 59 | 8.25 | 986 | 38 |
| 9 | 2015 | 1507 | 196 | 1205 | 1046 | 59 | 8.36 | 998 | 38 |
| 10 | 2016 | 1525 | 198 | 1222 | 1072 | 59 | 8.47 | 1007 | 38 |
| 11 | 2017 | 1544 | 199 | 1239 | 1098 | 59 | 8.58 | 1015 | 38 |

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| CGR | 1.3 | 0.78 | 1.5 | 2.8 | 0.1 | 1.3 | 0.9 | 0.9 |
|---|---|---|---|---|---|---|---|---|
| Mean | 1451.73 | 191.91 | 1153.55 | 967.27 | 58.91 | 8.03 | 890.74 | 36.72 |
| S.D | 62.08 | 5.28 | 70 | 87.66 | 0.54 | 0.37 | 281.64 | 1.61 |
| CV | 4.28 | 2.75 | 5.21 | 9.06 | 0.92 | 4.58 | 31.62 | 4.40 |

(**Source**: FAOSTAT production data, www. Faostat.org)

**Figure 2 World Livestock Population in (Million Stock)**

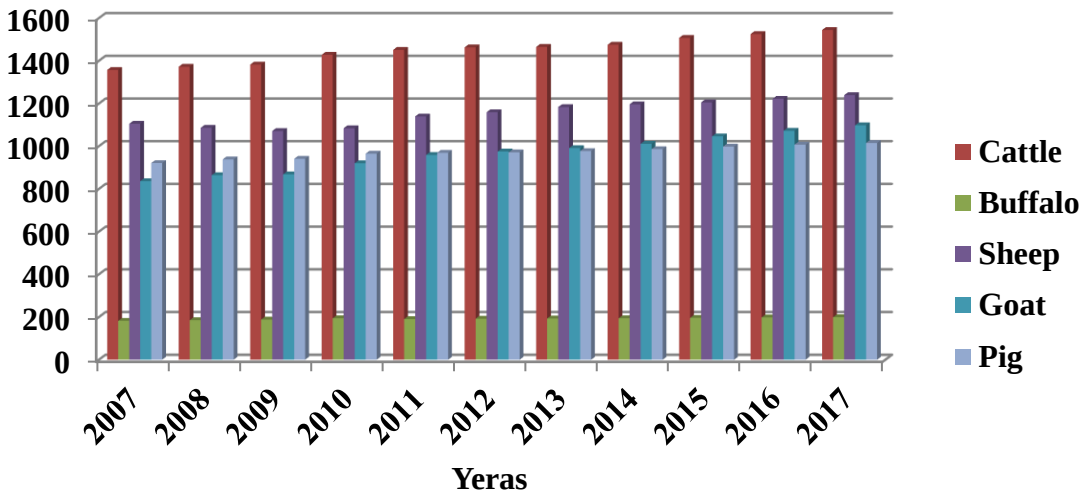


Table 3 provides insights into the growth of various types of animals worldwide from 2007 to 2017. The data indicates a consistently high proportion of cattle in the total livestock population throughout the considered years. Similarly, the proportion of sheep in the global livestock population remains significant during the same period. Conversely, the populations of donkeys, camels, and mules are observed to be lower compared to other livestock.

Summarizing the observations, the annual growth rates for cattle, buffalo, sheep, goats, horses, donkeys, pigs, and camels are 1.3 percent, 0.78 percent, 1.5 percent, 2.8 percent, 0.1 percent, 1.3 percent, 0.9 percent, and 0.9 percent, respectively, during the study period. This implies that the global goat population has increased more rapidly than other livestock species, while the horse and pony population has shown gradual growth. On average, during the reported period, the world witnessed populations of 1,441 million cattle, 191.91 million buffalo, 1,153.55 million sheep, 967.27 million goats, 58.91 million horses and ponies, 8.03 million donkeys, 890.74 million pigs, and 36.72 million camels and mules. Notably, the coefficient of variance is 31.62 percent for pigs

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globally during the period 2007 to 2017. In contrast, the lowest coefficient of variance, at 0.92 percent, is recorded for horses and ponies worldwide during the same period.

### 8.4 Milk Production in Asian Countries and World

According to FAO statistics, there was a 1.06 percent increase in world milk production, rising from 818 million tons in 2016 to 834 million tons in 2017. Approximately two-thirds of this increase is concentrated in developed countries. Of the total world milk production, around 81 percent is contributed by cows, with the remaining 19 percent coming from buffaloes. South Asian countries receive a significant portion of the globally produced milk, with a notable focus on processed milk products like skimmed milk powder, butter, ghee, and cheese. The EU, US, India, Pakistan, and China are key players in the trade of these processed dairy products.

In developing countries, more than 80 percent of milk consumption is managed by informal market traders, often lacking sufficient regulation. India holds the title of the largest producer of dairy products globally. In 2016, the world exported approximately 72,339 million tons and imported around 68,406 million tons of milk. New Zealand emerged as the world's largest exporter of dairy products, with dairy being the country's primary export earner. On the other hand, Japan stands out as the world's largest importer of dairy products.

Since 2007, the demand for dairy products has witnessed significant growth, particularly in the Asian region, where per capita consumption increased from 64 kg in 2007 to 84 kg in 2016. Asian consumers now represent nearly half of the global demand for milk and milk products. Table 3 provides insights into milk production in Asian countries compared to the global production during 2017.

**Table No 4**

**Milk Production in Asian Countries in 2017 (million ton)**

| Sr.No | Countries | Milk Production | Percentage to Total |
|---|---|---|---|
| 1 | China | 43108 | 14.91 |
| 2 | India | 160377 | 55.46 |
| 3 | Indonesia | 1490 | 0.52 |
| 4 | Iran | 7870 | 2.72 |
| 5 | Japan | 7340 | 2.54 |

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| | | | |
|---|---|---|---|
| 6 | South Korea | 2197 | 0.76 |
| 7 | Malaysia | 86 | 0.03 |
| 8 | Pakistan | 42000 | 14.52 |
| 9 | Philippines | 23 | 0.01 |
| 10 | Saudi Arabia | 2440 | 0.84 |
| 11 | Thailand | 1340 | 0.46 |
| 12 | Turkey | 20927 | 7.24 |
| **World** | | **289198** | **100.00** |

**(Source**-FAS/USDA 2017)

**Figure 3 Milk Production in Some Asian countries**

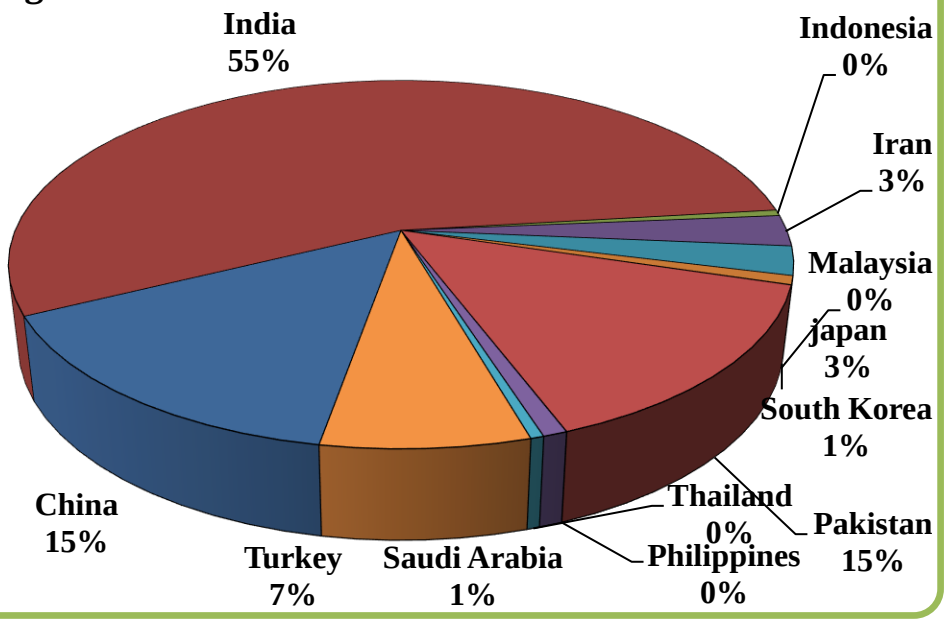


Table 4 provides insights into the milk production of Asian countries and their respective percentages in the total milk production. Notably, India emerges as the primary contributor, accounting for 55.46 percent of the total milk production in Asian countries. Following closely are China at 14.91 percent and Pakistan at 14.52 percent. This implies that approximately 80 percent of the overall milk production in Asian countries is attributed to just three nations—India, China, and Pakistan. Conversely, the Philippines, Malaysia, Thailand, and Indonesia exhibit lower percentages compared to other Asian countries. Table 5, meanwhile, outlines species-wise milk production globally.

**Table: 3.5**

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**Milk Production in world (Million Ton)**

| Sr.No | Year | Cow | Buffaloes | Goat | Sheep | Total |
|---|---|---|---|---|---|---|
| 1 | | 569.6 | 83.9 | 14.8 | 9.2 | 679.2 |
| | 2007 | (83.9) | (12.4) | (2.2) | (1.4) | 100 |
| | | 578.7 | 89.6 | 15.2 | 9.1 | 694.2 |
| 2 | 2008 | (83.4) | (12.9) | (2.2) | (1.3) | 100 |
| 3 | | 580.5 | 90.3 | 15.1 | 9 | 696.6 |
| | 2009 | (83.3) | (13) | (2.2) | (1.3) | 100 |
| 4 | | 599.6 | 92.5 | 16.6 | 10 | 721 |
| | 2010 | (83.2) | (12.8) | (2.3) | (1.4) | 100 |
| 5 | | 612.63 | 95.83 | 17.55 | 10.04 | 738.96 |
| | 2011 | (82.9) | (13) | (2.3) | (1.4) | 100 |
| 6 | | 627.21 | 98.96 | 17.83 | 9.89 | 756.58 |
| | 2012 | (82.9) | (13.1) | (2.4) | (1.3) | 100 |
| 7 | | 631.85 | 102.42 | 17.72 | 10.17 | 765.06 |
| | 2013 | (82.6) | (13.4) | (2.3) | (1.3) | 100 |
| 8 | | 652.35 | 107.76 | 18.34 | 10.43 | 791.79 |
| | 2014 | (82.4) | (13.6) | (2.3) | (1.3) | 100 |
| 9 | | 660.02 | 109.11 | 19.13 | 10.62 | 802.22 |
| | 2015 | (82.3) | (13.6) | (2.4) | (1.3) | 100 |
| 10 | | 671.9 | 224.42 | 19.68 | 10.81 | 818.18 |
| | 2016 | (82.2) | (27.4) | (2.4) | (1.3) | 100 |
| 11 | | 683.8 | 160.19 | 20.23 | 11.04 | 834.13 |
| | 2017 | (82) | (19.2) | (2.4) | (1.3) | 100 |
| **CGR** | | **1.92** | **7.39** | **3.24** | **2.01** | **2.14** |
| **AVERAGE** | | **366.5** | **66.7** | **10.2** | **5.9** | **442.8** |
| **S.D** | | **278.5** | **59.07** | **7.9** | **4.5** | **336.9** |
| **CV** | | **76** | **88.6** | **76.9** | **76.1** | **76.1** |

(**Source**: FAOSTAT production data, www.faostat.org)

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**Figure 4 Milk Production in World During 2017**

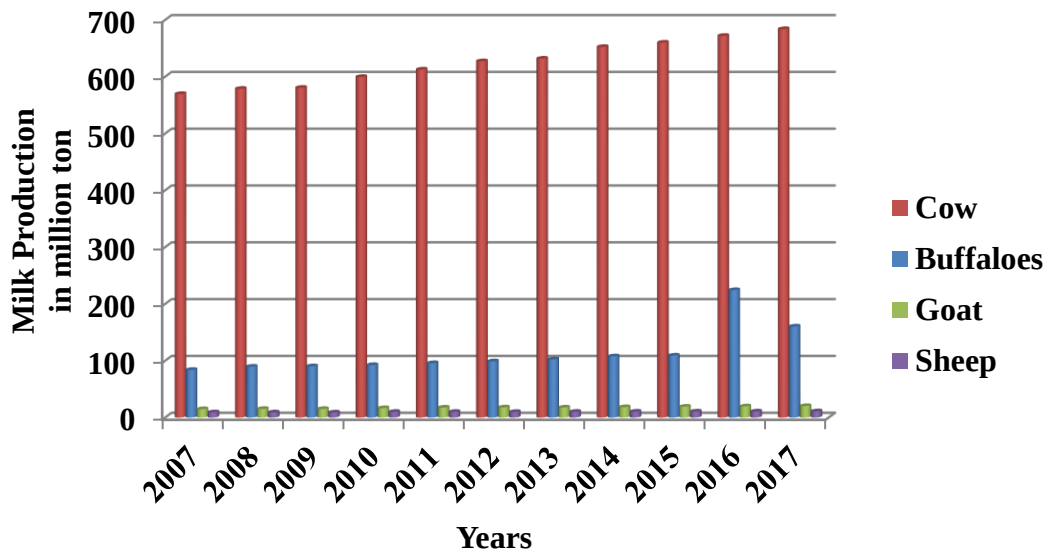


Table 5 provides an overview of the progress in milk production categorized by animal type from 2007 to 2017 on a global scale. It is evident from the data that, on average, over 80 percent of the world's total milk production during this period is attributed to cows, establishing them as the primary source of milk worldwide. The contribution of buffalo in the total milk production of the world varies between 12.4 percent to 27.4 percent, signifying its significant role. Conversely, the share of goat and sheep milk in total production is comparatively lower throughout the observed years.

The world's total milk production increased from 679.2 million tons in 2007 to 834.13 million tons in 2017, indicating a notable 22.81 percent rise during the reported period. On average, the milk production from cows was 366.5 million tons, contributing to the total global average of 442.8 million tons. Once again, this underscores the pivotal role of cows as the primary milk-producing animals globally. Buffalo exhibits the maximum coefficient of variance at 88.06 percent, while the minimum, at 76 percent, is observed in the case of cows..

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