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Trends in Area, Production and Productivity of Millets in India

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Abstract

This study examines the trends in the area, production, and productivity of millet crops in India, including Jowar, Bajra, Ragi, and small millets, from 2013-14 to 2021-22. Using secondary data from the Agricultural Statistics Division, the analysis employs metrics such as Annual Growth Rate (AGR), Standard Deviation (SD), and Coefficient of Variation (CV) to evaluate performance and variability. The findings indicate a consistent decline in the area under millet cultivation, with an AGR of -2.29%, while productivity has improved with an AGR of +1.91%. Despite a slight decline in production (-0.83%), improved yields have partially mitigated the effects of reduced cultivation area. The study highlights state-wise variations, with Rajasthan leading in production, while states like Andhra Pradesh and Gujarat achieve high productivity. These results highlight the significance of adopting improved varieties and sustainable agricultural practices to enhance millet production and address challenges such as climate change and food security.

***Key words*:** Millets production trends, Agricultural sustainability, Climate-resilient crops, Food security and nutrition

Millets are among the oldest domesticated crops, cultivated for both human consumption and animal fodder for approximately 8,700 to 3,300 years [1-2]. The name "millet" originates from the French word *mile*, meaning "lakhs," referring to the thousands of grains present in a small amount of millet [3]. These small-seeded grains are primarily grown in the arid and semi-arid regions of Africa and Asia [4]. Known for their adaptability, millets thrive in marginal and arid environments and demonstrate exceptional resilience to various abiotic stresses [5]. Millets are among the earliest domesticated crops in India, with evidence of their use traced back to the Indus Valley Civilization. They are well-suited to dryland agro-ecological systems in the arid and semi-arid tropics. As staple crops, millets play a vital role for millions of smallholder dryland farmers in Sub-Saharan Africa and Asia, providing significant contributions to nutrition, resilience, income, and livelihoods [6]. Renowned for their drought tolerance, millets hold immense potential in addressing contemporary challenges such as climate change, water scarcity, population growth, and inflation. These grains have been a staple in the diets of ancient civilizations, showcasing their resilience and enduring relevance [7]. The major millets producing regions of the world is shown in (Fig 1) produced by United States Geological Survey (USGS). Millet-based diets have a rich history of sustaining and nourishing populations across generations [8]. Millets are crucial to the global food and nutrition economy, recognized as vital grains for promoting balanced human nutrition. As cash crops for small-scale farmers, they can thrive in marginal soils, supporting nearly one-third of the world's population [9]. Their resilience and adaptability to diverse and adverse agro-climatic conditions make them a significant contributor to food security [10].

Millets are broadly classified into two categories: *major millets*, which include sorghum and pearl millet, and *minor millets*, such as finger millet, kodo millet, barnyard millet, proso millet, little millet, and foxtail millet [11]. These versatile grains serve multiple purposes, including food, feed, fodder, and fuel. Up until five to six decades ago, various types of millets were widely cultivated and constituted an integral part of regional diets across India. Both major millets (e.g., pearl millet and sorghum) and minor millets (e.g., finger millet, foxtail millet, proso millet, little millet, and kodo millet) hold significant potential for enhancing genetic diversity. This diversity is vital for ensuring nutrition security and sustaining agricultural resilience [12].

Millets provide remarkable benefits not only from agricultural and economic perspectives but also as a powerhouse of nutrition, making them an essential addition to human diets. They are rich in protein, essential fatty acids, dietary fiber, B vitamins, and vital minerals like calcium, iron, zinc, potassium, and magnesium [13]. These nutritional qualities make millets a cornerstone of sustainable and healthful diets. In addition to their nutrient density, millets contain bioactive compounds such as polyphenols, lignans, phytosterols, phytoestrogens, and phytocyanin. These compounds function as antioxidants, immune modulators, and detoxifying agents, contributing to overall health and protection against age-related degenerative diseases. Regular consumption of millets has been shown to reduce the risk of cardiovascular diseases (CVD), diabetes, cancer, metabolic syndrome, and Parkinson's disease [14].

In India, millets are predominantly cultivated in regions with low to moderate annual rainfall (200–800 mm), making them well-suited to arid and semi-arid climates. These versatile crops have a wide range of underutilized applications, including food, feed, fodder, biofuel, and brewing industries. Often referred to as "Smart Food," millets are beneficial for consumers, farmers, and the environment, offering

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sustainability and resilience. Global millet production in 2018 was estimated at 31,019,370 tonnes [15]. While millets account for only 2% of global cereal production, 95% of their cultivation takes place in Asia and Africa. Millets serve as a staple food in the drylands of these regions, where they are crucial for food security. Although most millet species are native to Africa, they have been domesticated and introduced to other parts of the world, reflecting their adaptability and global significance.

Millets are an important source of energy and essential nutrients, serving as a dietary staple for millions worldwide. They are nutritionally superior to many cereals, offering higher levels of dietary fiber, micro- and macronutrients, and bioactive compounds. Millets are a primary food source for smallholder farming communities in regions such as India, Africa, China, and parts of Central America, playing a crucial role in ensuring food security in low-income countries across Asia and Africa [16].

In India, millets were traditionally a significant component of the diet; however, the emphasis on food security during the Green Revolution of the 1960s led to their marginalization as "orphan crops," resulting in a decline in both consumption and cultivation. Prior to the Green Revolution, millets constituted approximately 40% of all cultivated grains, a proportion that has since reduced to around 20%. This decline is attributed not only to reduced consumption but also to the replacement of millet cultivation with commercial crops, oilseeds, pulses, and maize. These alternative crops have become more profitable, supported by policies promoting subsidized inputs, incentivized procurement, and their inclusion in the Public Distribution System. Consequently, dietary patterns have shifted towards fine, calorie-dense cereals, further diminishing the prominence of millets.

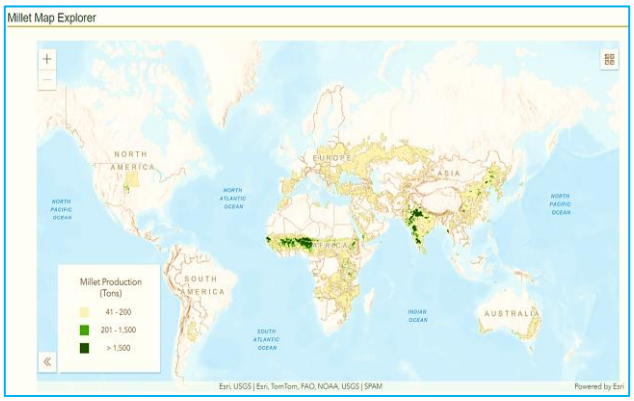

Fig 1 Major millet producing areas in the world (Source: Esri, USGS)

India accounts for nearly 40% of global millet production, making it the largest producer and second-largest exporter of millets worldwide. According to data from the U.S. Department of Agriculture's Foreign Agricultural Service (February 2023), India contributed 39% of the world's millet production in 2022, producing approximately 12 million tonnes out of a global total of 30.48 million tonnes. Niger is the second-largest producer, contributing 11%, followed by China at 9%. Together, these three countries accounted for nearly half of global millet production. The top 10 millet-producing countries collectively contributed 89% of total production, with eight of these countries, excluding India and China, located in Africa.

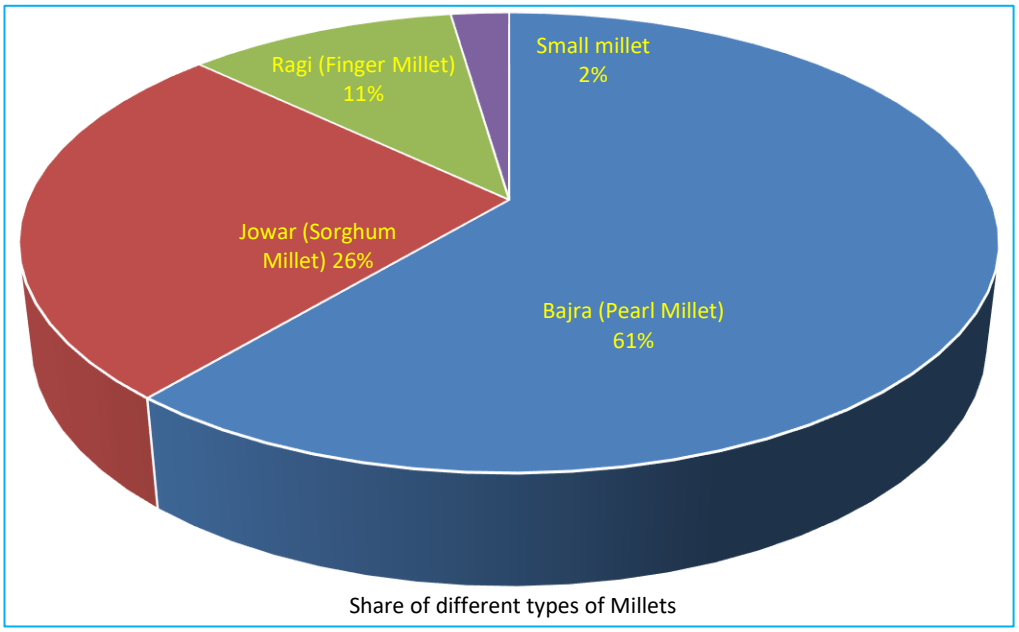

Fig 2 Share of different types of millets in total millets produced in India in 2021-22

The pie chart (Fig 2) illustrates the share of different types of millets in overall production. Bajra (Pearl millet) constitutes the largest share, as represented by the largest segment (61%) of the chart. Jowar (Sorghum Millet) accounting for 26% of the total, it is the second most produced millet type. Ragi (Finger millet) contributing 11% to the total production, it ranks third. Small millets representing 2%, it has the smallest share among the four types mentioned.

Millets, which have diverse origins and are suited to a variety of environmental conditions, are essential crops for maintaining food security in drought-prone and marginal areas of India. The cultivation of different types of millets is concentrated in specific regions of India, with the crops being adapted to local climatic and soil conditions. With increasing recognition of their nutritional benefits, millets could play a larger role in enhancing agricultural diversity and food security in India, especially in the face of climate change and water scarcity. There may be a number of other causes for the declining millet production in the country, which need to be critically identified. On this backdrop, the present study attempted to examine the performance of area, production and yield of millets in India.

MATERIALS AND METHODS

The study analyses the growth performance of the area under cultivation, production, and productivity (yield) of millet crops such as jowar, bajra, ragi, and small millets. Data for the period 2013-14 to 2021-22 was collected from secondary sources, specifically the Agricultural Statistics Division of the Department of Agriculture & Farmers Welfare, New Delhi [17]. The Key methods employed in the study for analysis are:

Annual growth rate (AGR): Used to estimate the mean annual growth rate of area, production, and productivity (yield) of millets over the study period. AGR provides an accurate way to assess trends over time.

Standard deviation (SD): Measures the extent of variation in data values from the mean. A lower SD indicates less variability, while a higher SD indicates more variability.

Coefficient of variation (CV): Expresses the ratio of standard deviation to the mean as a percentage, indicating data stability. Lower CV values signify less variability and greater stability and vice versa.

CV is calculated using the following formula:

$$CV = (\text{Std Dev} / \text{Mean}) \times 100$$

RESULTS AND DISCUSSION

The data in the (Table 1) presents trends in the area, production, and productivity of total millets from 2013-14 to 2021-22. The area under millet cultivation shows a decreasing trend over the period from 2013-14 to 2021-22. The area was 15,480.11 lakhs hectares in 2013-14 and decreased to 12,288.96 lakhs hectares by 2021-22. The Annual Growth Rate (AGR) for the area is -2.29%, indicating a consistent reduction in the area under millet cultivation. The standard deviation (SD) of 1,144.87 and the coefficient of variation (CV) of 8.14% suggest moderate variability in the area cultivated from year to year, reflecting fluctuations in area under millet production.

While the area has decreased, the production of millets has shown some variation. It decreased from 17,204.75 lakhs tonnes in 2013-14 to 15,999.76 lakhs tonnes in 2021-22. Despite the decline in area, production figures have fluctuated, with notable increases in certain years (e.g., 2019-20 and 2020-21) suggesting that other factors, such as improvements in yield, may have compensated for the area decline. The AGR for production is -0.83%, showing a slight decline, but less significant compared to the decline in area. The standard deviation for production (1,383.35 lakhs tonnes) is higher than for area, and the CV of 8.5% indicates more variability in production year-to-year. Productivity has increased over the years, rising from 1,111 kg/ha in 2013-14 to 1,302 kg/ha in 2021-22. The AGR for productivity is +1.91%, reflecting consistent improvement in productivity over the period. With a standard deviation of 113 kg/ha and a CV of 9.77%, there is more variability in productivity, but overall, it shows a positive growth trend [19].

Table 1 Area, production and productivity of total millets from 2013-14 to 2021-22

Years	Area (000 ha)	Production (000 Tonnes)	Productivity (Kg/ ha)
2013-14	15480.11	17204.75	1111
2014-15	15276.99	17076.3	1118
2015-16	14993.79	14517.46	968
2016-17	14718.14	16124.81	1096
2017-18	14245.61	16436.46	1154
2018-19	12543.01	13711.24	1093
2019-20	13829.25	17260.58	1248
2020-21	13633.42	18020.55	1322
2021-22	12288.96	15999.76	1302
Mean	14112.14	16261.32	1156
SD	1144.87	1383.35	113
C.V (%)	8.14	8.5	9.77
AGR	-2.29	-0.83	1.91

Agricultural Statistics Division Department of Agriculture & Farmers Welfare, New Delhi

The (Fig 3) reveals the trends in the area under millet cultivation and millet production in India from 2013-14 to 2021-22. The area under millet cultivation shows a consistent decline over the years. The downward-sloping linear trend line confirms a significant reduction in the area dedicated to millet farming, as indicated by the equation $y = -369.99x + 15962$ $y = -369.99x + 15962$ with $R^2 = 0.7833$, suggesting a strong negative trend. Whereas the line which represents millet production displays minor fluctuations but remains relatively stable with a slight upward trend in recent years. The linear trend line for production ($y=18.091x+16171$ $y = 18.091x + 16171$) shows a minimal positive slope with a low $R^2=0.0013$, indicating weak correlation and stability in production despite the decline in area under millet cultivation.

Area, production and yield of different varieties of millets

The data depicted in (Table 2) provides data on area, production, and yield for four types of millet (Jowar, bajra, ragi and small millets) over a period from 2013-14 to 2021-22. The dataset provides insights into the cultivation trends of four key millets—Jowar (Sorghum), Bajra (Pearl Millet), Ragi (Finger Millet), and Small Millets—over nine years.

Jowar (Sorghum millet)

The area under Jowar decreased over the years. The area under Jowar was 5793.44 lakhs hectares in 2013-14, and declined to 3800.81 lakhs hectares in 2021-22. The area has been consistently decreasing with an Annual Growth Rate (AGR) of -3.821%. Similarly, production of jowar also saw a decrease, dropping from 5541.81 lakhs tonnes in 2013-14 to 4150.57 lakhs tonnes in 2021-22. The Annual Growth Rate (AGR) for production is -2.77%. Despite the reduction in area and production, the yield has fluctuated but generally showed improvement. It increased from 957 kg/ha in 2013-14 to 1092 kg/ha in 2021-22, with an Annual Growth Rate (AGR) of +1.56% [20].

Bajra (Pearl millet)

The area under Bajra also experienced a decrease, from 7810.72 lakhs hectares in 2013-14 to 6840.8 lakhs hectares in 2021-22, but at a much lower rate compared to Jowar. The AGR is -1.33%. Here production showed more stability compared to Jowar, which was 9250.09 lakhs tonnes in 2013-14 to 9780.63 lakhs tonnes in 2021-22. The AGR is +0.63%, indicating a slight increase in production despite the area reduction. Yield for Bajra improved from 1184 kg/ha in 2013-14 to 1430 kg/ha in 2021-22, showing an improvement with a AGR of +2.35%.

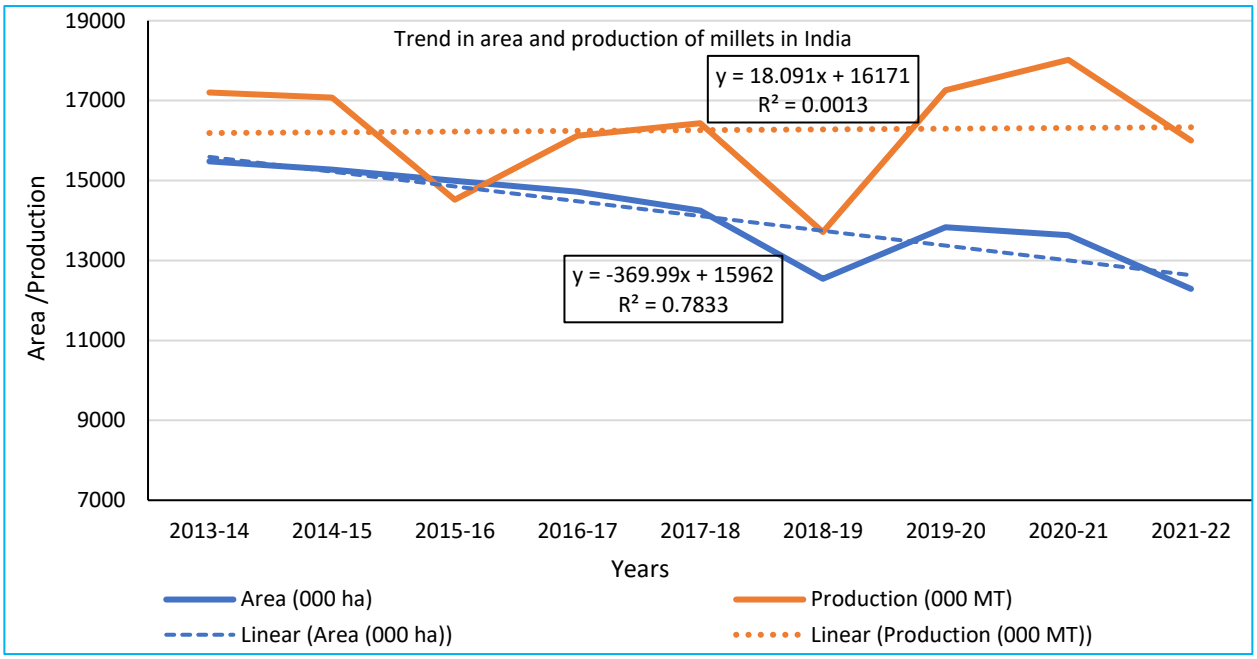

Fig 3 Trends in area and production of millets in India from 2013-14 to 2021-22

Ragi (Finger millet)

The area under ragi experienced a slight increase from 1193.64 lakhs hectares in 2013-14 to 1218.43 lakhs hectares in 2021-22, though the change is minimal. The AGR for area is +0.23%. Production for Ragi fluctuated, which was 1982.94 lakhs tonnes in 2013-14 and decreased to 1701.12 lakhs tonnes in 2021-22. The AGR for production is -1.57%. Yield for Ragi showed a consistent increase, from 1661 kg/ha in 2013-14 to 1724 kg/ha in 2020-21 and again declined to 1396 kg/ha in 2021-22, with a AGR of -1.77%.

Small millets

Small millets saw a sharp decrease in area, from 6.82 lakhs hectares in 2013-14 to 4.28 lakhs hectares in 2021-22, with an Annual Growth Rate (AGR) of -1.017%. Production of small millets followed a similar trend, which was 429.91 lakhs tonnes in 2013-14 to 367.44 lakhs tonnes in 2021-22. The AGR for production is -1.61%. Despite the reductions in area and production, yield improved over the years, from 630 kg/ha in 2013-14 to 857 kg /ha in 2021-22, with an Annual Growth Rate (AGR) of +4.32% [21].

Table 2 Area, production and productivity (yield) of millets in India from 2013-14 to 2021-22

Year	Jowar (Sorghum millet)			Bajra (Pearl millet)			Ragi (Finger millet)			Small millets		
	Area (Lac ha)	Production (Lac Tons)	Yield (kg/ha)	Area (Lac ha)	Production (Lac Tons)	Yield (kg/ha)	Area (Lac ha)	Production (Lac Tons)	Yield (kg/ha)	Area (Lac ha)	Production (Lac Tons)	Yield (kg/ha)
2013-14	57.94	5541.81	957	78.10	9250.09	1184	11.93	1982.94	1661	6.82	429.91	630
2014-15	61.62	5445.3	884	73.17	9184.22	1255	12.08	2060.91	1706	5.89	385.87	654
2015-16	60.77	4238.02	697	71.28	8066.63	1132	11.38	1821.89	1601	6.50	390.92	602
2016-17	56.24	4567.9	812	74.58	9729.86	1305	10.16	1385.11	1363	6.19	441.94	714
2017-18	50.24	4803.38	956	74.80	9208.85	1231	11.94	1985.24	1662	5.46	438.99	804
2018-19	40.93	3475.41	849	71.05	8664.13	1219	8.90	1238.71	1390	4.53	333.00	734
2019-20	48.24	4772.11	989	75.42	10362.6	1374	10.04	1755.06	1747	4.58	370.81	809
2020-21	43.78	4812.07	1099	76.52	10863.17	1420	11.59	1998.36	1724	4.44	346.95	781
2021-22	38.01	4150.57	1092	68.40	9780.63	1430	12.18	1701.12	1396	4.28	367.44	857
Mean	50.86	46.45	926	73.71	94.57	1283	11.14	1769.92	1583	5.41	389.53	731
SD	8.76	5.84	130	2.72	8.99	105	1.15	288.64	156	0.97	39.821	88
CV (%)	17.22	12.58	14.03	3.68	9.51	8.23	10.36	16.3	9.85	18.08	10.22	12.12
AGR	-3.821	-2.77	1.56	-1.33	0.63	2.35	0.23	-1.57	-1.77	-1.017	-1.61	4.32

Source: Data obtained from Agricultural Statistics Division Department of Agriculture & Farmers Welfare, New Delhi

State wise area, production and productivity of millets

The variations across states in area, production and productivity of millet are revealed from (Table 4). Rajasthan leads with the highest area 43.63 lakhs ha. devoted to millet and production was 42.80 lakhs tonnes, accounting for 26.74% of India's total millet production. Productivity is 981 kg/hectare. Maharashtra is the second-largest producer, contributing 14.40% of the total production with a productivity of 938 kg/hectare. Uttar Pradesh ranks third in production, contributing 13.91% with a notably high productivity of 2055 kg/hectare. Andhra Pradesh exhibits the highest productivity at 2363 kg/hectare, despite a relatively small area only 1.52 lakhs hectares. Madhya Pradesh also shows good productivity of 2129 kg/hectare, contributing 7.38% of the production. Gujarat and Haryana show productivity above 2000 kg/hectare with 2310 kg and 2235kg per hectare respectively.

Chhattisgarh has the lowest productivity among states with significant millet cultivation, at 495 kg/hectare. Other states having low-productivity include Odisha (674 kg /hectare) and Jammu & Kashmir (557 kg/hectare). States/UTs like Goa, Manipur, Mizoram, Andaman and Nicobar Islands, Chandigarh, UT of Ladakh, and Lakshadweep reported no millet production.

The total area under millet cultivation in India for 2021-2022 was 122.89 lakhs ha. The total production stood at 159.99 lakhs tonnes, with an average productivity of 1302 kg/hectare. The leading millet-producing regions are in Western and Northern India (like Rajasthan, Maharashtra, and Uttar Pradesh), whereas Southern states like Andhra Pradesh and Tamil Nadu also make significant contributions with relatively high productivity. Some states with lesser areas under cultivation have high productivity, indicating efficient farming practices or favourable climatic conditions for millet growth.

The top ten millet producing states in terms of area and production is clearly depicted from (Fig 4). they are Rajasthan, Maharashtra, Uttar Pradesh, Karnataka, Madhya Pradesh, Gujarat, Haryana, Tamil Nadu, Andhra Pradesh and Uttarakhand [22].

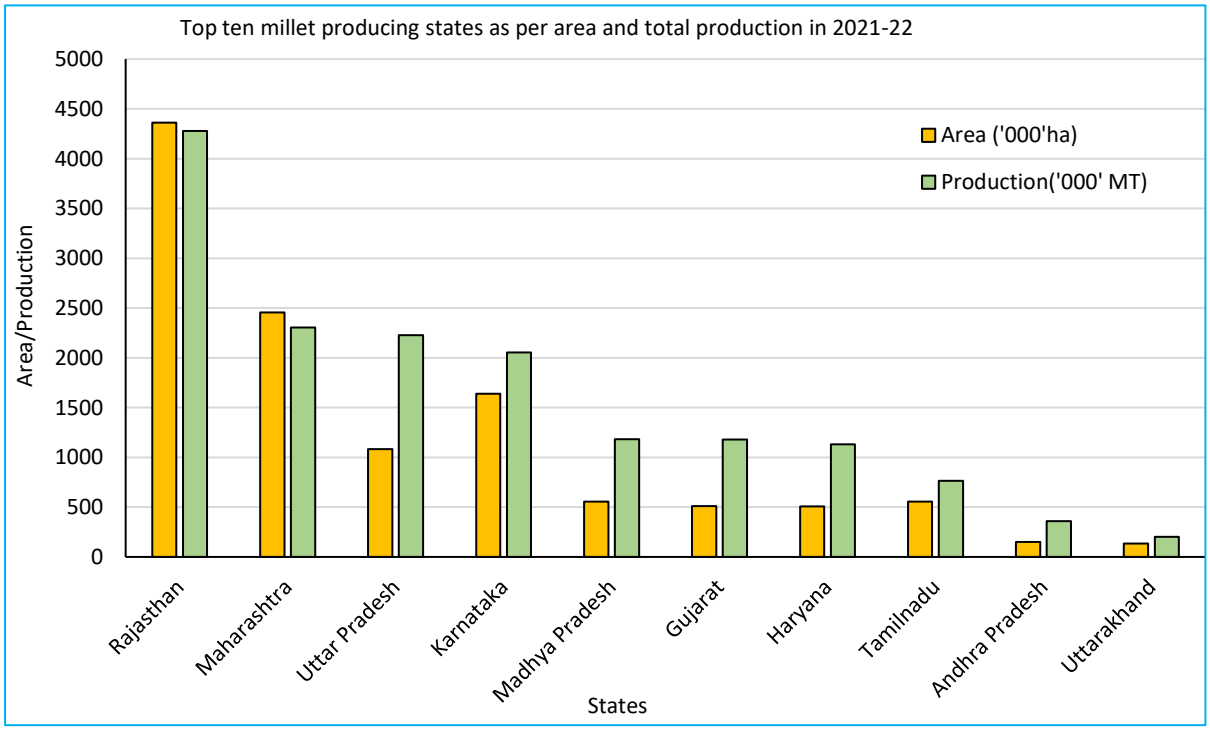

Fig 4 Top ten millet producing states in India in area and production in 2021-22

Table 4 State wise area, production and productivity of millets in India 2021-2022

State/UTs	Area (in Lakh ha)	Production (in Lakh tonnes)	% share	Productivity (kg/ha)
Rajasthan	43.63	42.80	26.74	981
Maharashtra	24.57	23.05	14.4	938
Uttar Pradesh	10.83	22.26	13.9	2055
Karnataka	16.38	20.53	12.8	1254
Madhya Pradesh	5.55	11.81	7.4	2129
Gujarat	5.11	11.79	7.3	2310
Haryana	5.07	11.32	7.1	2235
Tamilnadu	5.55	7.65	4.8	1380
Andhra Pradesh	1.52	3.59	2.2	2363
Uttarakhand	1.33	2.03	1.25	1507
Telangana	0.74	1.23	0.77	1659
Odisha	1.01	6.8	0.42	0674
Chhattisgarh	0.57	0.28	0.18	0495
Arunachal Pradesh	0.27	0.28	0.17	1033
Jharkhand	0.21	0.18	0.11	0872
Bihar	0.80	0.8	0.05	1002

Nagaland	0.80	0.8	0.05	948
West Bengal	0.70	0.7	0.05	1125
NCT Delhi	0.40	0.6	0.04	1526
Jammu and Kashmir	0.11	0.6	0.04	557
Assam	0.40	0.3	0.02	664
Meghalaya	0.21	0.28	0.018	962
Himachal Pradesh	0.3	0.25	0.016	740
Sikkim	0.2	0.21	0.013	1044
Dadra & Nagar Haveli	0.08	0.14	0.009	1659
Tripura	0.11	1.33	0.008	811
Punjab	0.10	0.76	0.005	633
Daman & Diu	0.05	0.76	0.005	1520
Kerala	0.039	0.6	0.004	1538
Puducherry	0.008	0.18	0.001	2250
Goa	0	0	0	0
Manipur	0	0	0	0
Mizoram	0	0	0	0
Andaman and Nicobar Island	0	0	0	0
Chandigarh	0	0	0	0
UT of Ladakh	0	0	0	0
Lakshadweep	0	0	0	0
All-India	122.88	159.99	100	1302

Source: Agricultural Statistics Division Department of Agriculture & Farmers Welfare, New Delhi

State wise production of different types of millets

Data depicted in (Table 5) provides state-wise data on the area and production of millets in India for the year 2021-2022, categorized by millet types. The total area under millet cultivation in India is 122.88 lakh ha. The total production is 159.99 lakhs tonnes. The most significant areas are for Bajra (68.40 lakhs hectares), followed by Jowar (38.01 lakhs hectares) and Ragi (12.18 lakhs hectares). The share of Small Millets in area and production is comparatively lower (4.29 lakh ha. and 3.67 lakhs tonnes). These four types of millets are cultivated in India.

1. *Jowar*: Known as sorghum, a staple in dryland farming.
2. *Bajra*: Pearl millet, commonly grown in arid and semi-arid regions.
3. *Ragi*: Finger millet, known for its nutritional value and drought resistance.
4. *Small millets*: A group of minor millets such as finger millet, foxtail millet, barnyard millet, etc.

The state-wise data on millet cultivation in India for 2021-22 highlights the significant contribution of Bajra, Jowar, Ragi, and Small Millets to the country's agricultural landscape. With a total millet cultivation area of 122.88 lakh hectares and a production of 159.99 lakh tonnes, Bajra holds the largest share, followed by Jowar and Ragi. Small Millets account for a relatively smaller portion of both area and production. These four millet types continue to play a vital role in India's diverse agricultural system.

Leading states in millet cultivation

Maharashtra is the largest producer of Jowar and Bajra, with an area of 1648.66 thousand ha. for Jowar and 666.72 thousand ha. for Bajra. The production of Jowar (1558 thousand tonnes) and Bajra (618.72 thousand tonnes) in Maharashtra is significantly high. Rajasthan is a dominant producer of Bajra, with 3736.1 thousand ha. and production of 3739.84 thousand tonnes. Rajasthan also contributes the largest share to Bajra cultivation in India. Karnataka stands out for Ragi cultivation, with 846 thousand ha. and 1126.87 thousand tonnes of production. Madhya Pradesh shows significant area under Bajra 343 thousand ha. and Small Millets 89 thousand ha. contributing to its high millet production of 1181.4 thousand tonnes.

High production states

Uttar Pradesh and Karnataka also show significant production of Jowar, with Uttar Pradesh contributing 269.84 thousand tonnes and Karnataka 731.48 thousand tonnes of Jowar. Gujarat contributes substantially to Bajra, with 446.21 thousand hectares and 1089.64 thousand tonnes of production.

States specialized in ragi and small millets

Karnataka remains the leader in Ragi cultivation, contributing 1126.87 thousand ha. from 846 thousand hectares. Tamil Nadu is another major producer of Ragi, with an area of 74.44 thousand hectares and production of 227.49 thousand tonnes. Small Millets are mostly grown in Chhattisgarh, with an area of 52.35 thousand ha. and production of 26.23 thousand tonnes.

States with low millet area and production

Odisha has a smaller area under Small Millets (Finger Millet or Ragi) 38.37 thousand ha. but contributes to the national production significantly (43.65 thousand tonnes). Bihar and West Bengal have relatively smaller areas under millet cultivation compared to other states, but their production is noteworthy in certain types. Bihar grows Jowar, Bajra, and Ragi with production figures of 8.5 thousand tonnes from 8.48 thousand hectares. Some smaller states, like Meghalaya, have small areas (e.g., 2.92 thousand hectares) but still contribute some production of Small Millets (2.81 thousand tonnes).

By analyzing the data in (Table 5) it can be concluded that Bajra is the dominant millet type in terms of area (6840.8 thousand ha.) and production (9780.63 thousand tonnes), especially in Rajasthan, Maharashtra, and Gujarat. Jowar has a large area in Maharashtra, Karnataka, and Uttar Pradesh, while Ragi is mainly concentrated in Karnataka and Tamil Nadu. Small Millets, though important, are cultivated on a much smaller scale in India, with Chhattisgarh and Madhya Pradesh being major contributors. This data highlights the regional variations in millet cultivation across India, with certain states excelling in specific types of millet based on climatic and agronomic conditions [24].

Table 5 State wise area and production of millets based on its types (2021-2022)

State	Area (000 ha)					Production (000 Tonnes)				
	Jowar	Bajra	Ragi	Small millets	Total millets	Jowar	Bajra	Ragi	Small millets	Total millets
Andhra Pradesh	77	31	30	14	152	259.61	55.4	31.14	13.01	359.16
Arunachal Pradesh	0	0	0	27.12	27.12	0	0	0	28.01	28.01
Assam	0			4.82	4.82	0	0	0	3.2	3.2
Bihar	1.44	2.89	2.45	1.7	8.48	1.54	3.29	2.39	1.28	8.5
Chhattisgarh	1.09	0.06	3.38	52.35	56.88	0.91	0.03	1.01	26.23	28.18
Goa	0			0	0	0	0	0	0	0
Gujarat	42.76	446.21	10	11.51	510.48	57.55	1089.64	9	22.88	1179.07
Haryana	23.39	483.1			506.49	12.33	1119.83	0	0	1132.16
Himachal Pradesh	0.01	0.57	1.13	1.67	3.38	0.01	0.29	1.06	1.14	2.5
Jammu & Kashmir	0	8.7	0	2.12	10.82	0	5.17	0	0.86	6.03
Jharkhand	1.56	0.14	19.03		20.73	1.28	0.09	16.7	0	18.07
Karnataka	615	148	846	29	1638	731.48	171.38	1126.87	23.87	2053.6
Kerala	0.19		0.17	0.03	0.39	0.28	0	0.28	0.04	0.6
Madhya Pradesh	123	343	0	89	555	236.04	868.82	0	76.54	1181.4
Maharashtra	1648.66	666.72	81.26	60.26	2456.9	1558	618.72	102.63	26.03	2305.38
Manipur	0	0	0	0	0	0	0	0	0	0
Meghalaya	0	0	0	2.92	2.92	0	0	0	2.81	2.81
Mizoram	0				0	0	0	0	0	0
Nagaland	0.27	0.65	0.34	7.41	8.67	0.25	0.49	0.22	7.26	8.22
Odisha	6.14	1.56	54.98	38.37	101.05	3.86	0.96	43.65	19.61	68.08
Punjab	0	1.2			1.2	0	0.76	0	0	0.76
Rajasthan	619.98	3736.1		6.7	4362.78	535.66	3739.84	0	4.24	4279.74
Sikkim	0	0	2.04	0	2.04	0	0	2.13	0	2.13
Tamil Nadu	397.23	59.96	74.44	22.98	554.61	362.04	146.12	227.49	29.83	765.48
Telangana	69	4	1	0	74	117.07	4.04	1.65	0	122.76
Tripura	0	0	0	1.64	1.64	0	0	0	1.33	1.33
Uttar Pradesh	171	905		7	1083	269.84	1951.18	0	4.63	2225.65
Uttarakhand	0		86	47	133	0	0	127.11	73.27	200.38
West Bengal	0.19	0.07	5.33	1.29	6.88	0.1	0.03	6.26	1.35	7.74
Andaman & Nicobar	0	0	0	0	0	0	0	0	0	0
Chandigarh	0	0	0	0	0	0	0	0	0	0
Dadra & Nagar Haveli	0		0.85	0	0.85	0	0	1.41	0	1.41
Daman & Diu	0	0.5	0	0	0.5	0	0.76	0	0	0.76
UT of Ladakh	0	0	0	0	0	0	0	0	0	0
Lakshadweep	0	0	0	0	0	0	0	0	0	0
NCT Delhi	2.89	1.37	0	0	4.26	2.75	3.75	0	0	6.5
Puducherry	0	0.01	0.05	0.02	0.08	0.01	0.04	0.11	0.02	0.18
All-India	3800.81	6840.8	1218.43	428.92	12288.96	4150.57	9780.63	1701.12	367.44	15999.76

Source: Agricultural Statistics Division Department of Agriculture & Farmers Welfare, New Delhi

CONCLUSION

Millets remain vital to India's agricultural and nutritional landscape, particularly in arid and semi-arid regions. The study reveals a concerning decline in the cultivation area, driven by changing agricultural priorities, economic factors, and dietary shifts. However, advancements in yield, driven by improved varieties and agronomic practices, demonstrate the potential for reversing production declines. High-performing states like Rajasthan, Gujarat, and Andhra Pradesh illustrate the benefits of targeted interventions and optimal use of agro-climatic conditions. To ensure the long-term viability of millets, there is a need for policy support focusing on enhanced research, subsidies for millet cultivation, and their inclusion in food security programs. Promoting millets as a climate-resilient, nutritious crop can bolster efforts to meet future food security and sustainability goals. Strengthening policy support, research, and subsidies, along with integrating millets into food security programs, will be essential to promoting them as a climate-resilient and sustainable food source for the future.

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