

# Global and Indian

## scenario of millets

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*Millets are the food crops adapted to dryland agro-ecologies of the arid and semi-arid tropics. In India, millets are produced in most of the regions characterized by low to moderate precipitation (200–800 mm rainfall). Major millet crops include jowar or sorghum (*Sorghum bicolor*), bajra or pearl millet (*Pennisetum glaucum*), mandua/ragi or finger millet (*Eleusine coracana*); and small millets comprising of kangni or foxtail millet (*Setaria italica*), kutki or sama or little millet (*Panicum antidotale*), kodo millet (*Paspalum scrobiculatum*), jhangora or sawan or barnyard millet (*Echinochloa frumentacea*), cheena or proso millet (*Setaria italica*) and korale or brown top millet (*Brachiaria ramosa*). Other minor millets grown are Teff (*Eragrostis tef*) and Fonio (*Digitaria exilis* and *Digitaria iburua*) and Job's tears (*Coix lacryma-jobi*).*

**Keywords:** Area, Millets, Production, Yield

**I**NDIA is the leading producer and consumer of millet crops and their products. The people in arid and semi-arid regions of the country grow and consume millets as a staple food. Millets provide food and fodder security to the dryland agricultural communities. They are also being recognized as food grains for nutrition and health, and nearly organic in cultivation. Millets are the most secure crops to small farmers as they are the hardiest, resilient and climate adaptable crops in harsh, hot (up to 50°C) and drought environments. They are often the last standing crops in drought seasons and will be the sustainable future food source amidst of worsening climatic conditions.

### Current international scenario

Millets are mainly grown in tropical, sub-tropical and slightly temperate regions of the world, with Asia and Africa accounting for major production and consumption centres. Sorghum and proso millet (common millet) are most widespread being cultivated in 112 and 35 countries respectively during 2019 (FAOSTAT database, <http://www.fao.org/faostat/en/>). Global production of millet is about 97.75 million tonnes from 78.43 million hectares area. Sorghum and pearl millet comprise more than 90% of the area and production. The rest of the production includes finger millet, proso millet, foxtail millet and other non-segregated millets.

Sorghum is most widespread in terms of the total area covered by the countries, which is spread all

over the globe. The top 5 countries comprise Sudan, Nigeria, India, Niger and the USA possess 57% of the global area under sorghum with about 45% of global sorghum production. While Sudan has a maximum area of 7.141 million ha, the USA contributes the maximum production of 10.9 million tonnes. Average yield of sorghum in India is 1064 kg/ha which is much less than that of the world average of 1460 kg/ha (Table 1).

Pearl millet is cultivated in 36 countries in Africa, though India is the single largest country in terms of area (31.5%) and production (46.7%). Niger comes second with 24.3% area and 15.3% of production. The yield levels of India (1237 kg/ha) are much higher than the world average of 834 kg/ha. Finger millet is cultivated in 14 countries; the top 5 countries, viz. India,

**Table 1.** World area, production and yield of millet crops (mean of 2015–19)

| Millet         | Area (million ha) | Production (million tonnes) | Yield (kg/ha) |
|----------------|-------------------|-----------------------------|---------------|
| Sorghum        | 41.91             | 61.18                       | 1460          |
| Pearl millet   | 28.38             | 23.68                       | 834           |
| Proso millet   | 0.77              | 1.19                        | 1535          |
| Finger millet  | 2.31              | 3.33                        | 1442          |
| Foxtail millet | 0.79              | 2.11                        | 2688          |
| Teff           | 3.35              | 5.56                        | 1660          |
| Fonio          | 0.92              | 0.70                        | 790           |
| Total          | 78.43             | 97.75                       | 1247          |

**Table 2.** Millet crops area, production and yield in India during 2009–22

| Millet        | Area ('000 ha) |         |         | Production ('000 tonne) |         |         | Yield (kg/ha) |         |         |
|---------------|----------------|---------|---------|-------------------------|---------|---------|---------------|---------|---------|
|               | 2009–13        | 2014–18 | 2019–22 | 2009–13                 | 2014–18 | 2019–22 | 2009–13       | 2014–18 | 2019–22 |
| Sorghum       | 6684           | 4910    | 4355    | 4290                    | 4404    | 4632    | 913           | 897     | 1064    |
| Bajra         | 8480           | 7142    | 7415    | 7030                    | 8738    | 10149   | 1065          | 1223    | 1369    |
| Ragi          | 1211           | 1104    | 1097    | 985                     | 1710    | 1807    | 1580          | 1549    | 1647    |
| Small millets | 773            | 570     | 436     | 435                     | 403     | 349     | 554           | 707     | 800     |
| Total millets | 17149          | 13726   | 12680   | 12740                   | 15255   | 16937   | 1019          | 1111    | 1273    |

Source: estimations of Dept. of Economics & Statistics, DAC&FW, GoI, New Delhi

Ethiopia, Nepal, Uganda and Malawi in terms of area (99.4%) produce 99.6% of finger millet globally. Ethiopia has the highest yield level (2301 kg/ha). The yield in India is slightly higher than the global yield. Foxtail millet is a predominant crop of China with a production of 2.1 million tonnes from 0.79 million ha area. A large proportion (89.7%) of the area under proso millet is located in 5 countries, viz. Russian Federation, USA, Ukraine, North Korea and Kazakhstan that produce 86.4% of global proso millet. The bottom 25 countries of the total 35 countries consist 5.9% of proso millet area, producing 7.2% of global production. Foxtail millet is mainly cultivated in China, India and Myanmar.

Other Millets that are known and grown in Africa

such as teff are majorly grown in Ethiopia and Eritrea which contribute more than 90% of world's production. Amhara and Oromia regions together contribute more than 85% of Ethiopia's production. It is cultivated over 3.35 million ha land and producing 5.56 million tonnes at an average yield of 1660 kg/ha. Fonio is majorly grown in Guinea and Nigeria, which account for 88% of total production. It is cultivated over 0.92 million ha and producing 0.7 million tonnes at an average yield of 790 kg/ha. Job's Tears is a native crop to south-east Asia but finds usage in China, India, Japan, Myanmar, Thailand, Borneo, Philippines, etc. It is cultivated in Assam under shifting cultivation and called as Adlay.

Millet crops' utilization varies across countries

**Table 3.** Area, production and yield of millets in important millet growing states (states with area of more than 10000 ha)

| State             | Sorghum |              |        | Pearl millet |              |        | Finger millet |              |        | Small millets |              |        | Total |              |        |
|-------------------|---------|--------------|--------|--------------|--------------|--------|---------------|--------------|--------|---------------|--------------|--------|-------|--------------|--------|
|                   | Area*   | Pro-duction* | Yield* | Area*        | Pro-duction* | Yield* | Area*         | Pro-duction* | Yield* | Area*         | Pro-duction* | Yield* | Area* | Pro-duction* | Yield* |
| Andhra Pradesh    | 134     | 306          | 2289   | 34           | 63           | 1881   | 33            | 41           | 1248   | 22            | 17           | 798    | 222   | 428          | 1926   |
| Arunachal Pradesh |         |              |        |              |              |        |               |              |        | 22            | 27           | 1217   | 22    | 27           | 1217   |
| Bihar             | 1       | 1            | 1066   | 4            | 4            | 1134   | 3             | 3            | 892    | 4             | 3            | 784    | 13    | 12           | 943    |
| Chhattisgarh      | 3       | 4            | 1268   |              |              |        | 6             | 1            | 248    | 83            | 23           | 281    | 92    | 29           | 314    |
| Gujarat           | 72      | 99           | 1369   | 423          | 942          | 2227   | 13            | 14           | 1076   | 9             | 12           | 1291   | 518   | 1067         | 2062   |
| Haryana           | 42      | 22           | 527    | 483          | 986          | 2043   |               |              |        |               |              |        | 525   | 1009         | 1921   |
| Jammu & Kashmir   | 0       | 0            | 635    | 15           | 8            | 563    | 2             | 1            | 347    | 7             | 2            | 294    | 24    | 11           | 463    |
| Karnataka         | 911     | 954          | 1047   | 240          | 272          | 1133   | 666           | 1071         | 1609   | 30            | 21           | 721    | 1847  | 2319         | 1255   |
| Madhya Pradesh    | 157     | 299          | 1905   | 308          | 692          | 2246   | 1             | 0            | 277    | 117           | 92           | 788    | 582   | 1083         | 1860   |
| Maharashtra       | 2257    | 1641         | 727    | 719          | 594          | 826    | 86            | 98           | 1145   | 50            | 25           | 501    | 3112  | 2358         | 758    |
| Nagaland          |         |              |        | 1            | 1            | 1014   |               |              |        | 9             | 11           | 1122   | 11    | 12           | 1106   |
| Odisha            | 6       | 4            | 632    | 2            | 1            | 619    | 41            | 30           | 738    | 31            | 16           | 513    | 80    | 51           | 639    |
| Punjab            |         |              |        | 1            | 1            | 616    |               |              |        |               |              |        |       |              |        |
| Rajasthan         | 572     | 433          | 757    | 4240         | 4193         | 989    |               |              |        | 10            | 8            | 722    | 4823  | 4633         | 961    |
| Tamil Nadu        | 379     | 399          | 1053   | 59           | 142          | 2404   | 79            | 251          | 3186   | 24            | 31           | 1280   | 541   | 823          | 1521   |
| Telangana         | 78      | 102          | 1296   | 11           | 10           | 910    | 1             | 2            | 1270   | 1             | 1            | 1084   | 91    | 113          | 1249   |
| Uttar Pradesh     | 168     | 216          | 1287   | 907          | 1853         | 2044   |               |              |        | 9             | 6            | 691    | 1084  | 2075         | 1915   |
| Uttarakhand       |         |              |        |              |              |        | 95            | 132          | 1391   | 56            | 75           | 1332   | 151   | 207          | 1369   |

\*Expressed as Area ('000 ha), Production ('000 tonne); Yield (kg/ha)

Source: Estimations of Dept. of Economics & Statistics, DAC&FW, GoI, New Delhi.

and continents depending on the use and climate of production, and cultivars. In the USA and Europe, sorghum and other millets are grown for feed purpose with lesser concern for quality and associated traits. Hence, yields are very high. In the African and Asian countries where millet grains are consumed as a staple food, quality is important and mostly the local varieties of specific adaptation and culinary niceties are predominantly grown, which not necessarily possess appreciable yield potential. Similarly, in some countries of Africa and Asia where sorghum is used for making alcohol-based beverages, the quality is not important.

#### Current Indian scenario

India is the leading producer of millets. Most of the states of India grow one or more millet crop species. A total of about 16.9 million tonnes of millets food grains are produced in India from nearly 12.7 million ha area, which constitutes about 6% of the national food grain basket. Pearl millet is grown in about 7.4 million hectares yielding 10.1 million tonnes, followed by sorghum (4.35 million ha, yielding 4.63 million tonnes), finger millet (1.1 million ha, yielding 1.58 million tonnes) and other millets (0.44 m ha, yielding 0.35 million tonnes) (Table 2). Pearl millet, sorghum and finger millet account for more than 95% of the area under millets, while small millets comprising of barnyard millet, foxtail millet, little millet, kodo millet and proso millet constitute less than 5% of the area (Directorate of Economics and Statistics, DA&FW 2021).

In India, Rajasthan, Maharashtra and Karnataka are the topmost states in millets cultivation with a share of 35%, 23% and 14% to total millets area. Maharashtra and Karnataka have the maximum area under

sorghum while Rajasthan, Gujarat, Uttar Pradesh and Maharashtra have more area under pearl millet. Ragi has the maximum area in Karnataka, Tamil Nadu and Uttarakhand. Small millets area is maximum in Madhya Pradesh, Uttarakhand and Chhattisgarh (Table 3).

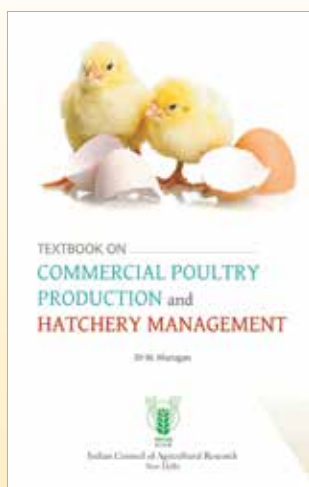
Despite the surrender of almost 56% area during last 50 years in the country, the millet production has increased from 11.3 to 16.9 million tonnes due to an increased productivity that went up by more than two times overall while it's more than tripling in pearl millet. Development and adoption of improved varieties/hybrids have played a significant role in the productivity improvement of these crops.

#### SUMMARY

The global scenario of millets production has been almost stable from the perspective of sorghum, pearl millet and finger millet. In India, area under millets has been decreasing drastically over years, despite the high adaptation of these crops to difficult and niche areas, climate-friendly cultivation and highly nutritious produce made available for consumption. With the Government of India including these crops under nutri-cereals under National Food Security Mission the United Nations decided to commemorate 2023 as the International year of millets and these crops are receiving the due importance in the country and across the world. These efforts would promote the consumption of millets, necessitating expansion of area under their cultivation and enhancing productivity.

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