

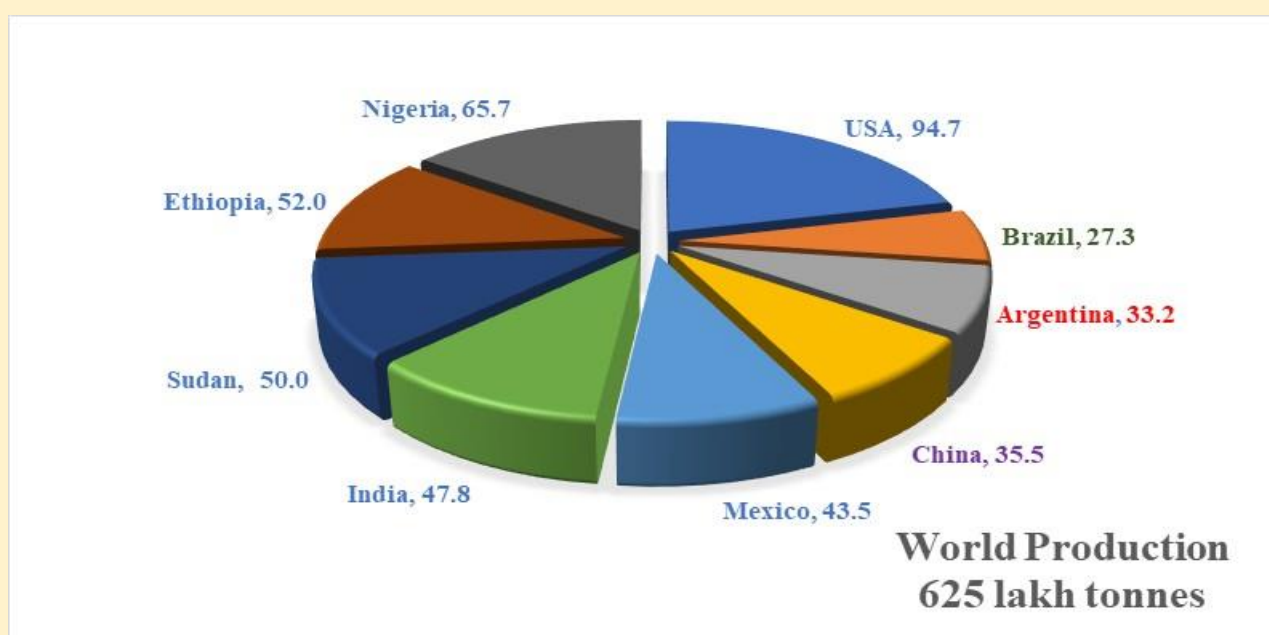
Acharya N.G. Ranga Agricultural University

Crop Outlook Reports of Andhra Pradesh

SORGHUM– January to December 2021

Sorghum (*Sorghum bicolor*) known to us as Jowar, originated in Africa and has spread throughout the globe. Sorghum is a genus of about 25 species of flowering plants in the grass family Poaceae. Some of these species have grown as cereals for human consumption and some in pastures for animals. Global demand for sorghum increased dramatically between 2013 and 2015 when China began purchasing US sorghum crops to use as livestock feed as a substitute for domestically grown corn. Globally, sorghum production was estimated at 62.51 million tonnes in 2020-21. The United States of America stands first in total production with 9.4 million tonnes (15%), followed by Nigeria, Ethiopia, and Sudan, (Figure 1). India ranks fifth in total sorghum production with 4.78 million tonnes grown in an area of 4.39 million hectares in 2020-21, whereas in kharif 2021-22, sorghum production was 1.54 million tonnes (1st advance estimates) in an area of 1.46 million hectares (agricoop.nic). Andhra Pradesh produced 4.10 lakh tonnes of sorghum (contributing 8.57 % to total country production) cultivated in 1.20 lakh hectares with a productivity of 3428 kg/hectare in 2020-21. According to 2nd advance estimates during 2021-22, sorghum was grown in 1.10 lakh hectares with a production of 3.48 lakh tonnes and productivity was 3164 kg/ha (des.ap.gov.in).

Figure 1: India's position in sorghum production during 2020 (lakh tonnes)



Source: United States Department of Agriculture, fas.usda.gov

ANGRAU Sorghum Outlook Report-January to December 2021

Table 1. Balance sheet of sorghum in India (in '000 tonnes)

| Sorghum | 2019/2020 | 2020/2021 | 2021/2022* |
|---------------------------|-----------|-----------|------------|
| Market Year Begins | Nov 2019 | Nov 2020 | Nov 2021 |
| Beginning Stocks | 153 | 394 | 584 |
| Production | 4772 | 4740 | 4600 |
| MY Imports | 0 | 0 | 0 |
| TY Imports | 0 | 0 | 0 |
| Total Supply | 4925 | 5134 | 5184 |
| MY Exports | 31 | 50 | 50 |
| TY Exports | 31 | 50 | 50 |
| Feed and Residual | 500 | 500 | 500 |
| FSI Consumption | 4000 | 4000 | 4200 |
| Total Consumption | 4500 | 4500 | 4700 |
| Ending Stocks | 394 | 584 | 434 |
| Total Distribution | 4925 | 5134 | 5184 |

*Forecast FSI: Food, Seed and Industrial;

MY=Marketing Year, begins with the month listed at the top of each column; TY=Trade Year, begins in October for all countries; 2021/22=October 2021-September 2022.

Source: US Department of Agriculture, fas.usda.gov

Table 1 explains the balance sheet of sorghum in India. The beginning stocks in the market year 2019 (begins in November) were 1.53 lakh tonnes, the ending stocks were 3.94 lakh tonnes, and the ending stocks in the market year 2020 (begins in November) were 5.84 lakh tonnes. In 2019-20 and 2020-21, total consumption was 45 lakh tonnes. The ending stocks in market year 2021 (begins from November) were estimated as 4.34 lakh tonnes.

Table 2: Area and production of major Sorghum producing states (Area- lakh ha, production-lakh tonnes, Yield-kg/hectare)

| States | 1990-91 | | 2000-01 | | 2010-2011 | | 2020-21 | | | Total coarse cereals production* | %share of sorghum production (2020-21) |
|-----------------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|----------------------------------|--|
| | A | P | A | P | A | P | A | P* | Y | | |
| Maharashtra | 63.31 | 59.48 | 50.94 | 39.88 | 40.6 | 34.52 | 19.03 | 15.01 | 789 | 39.57 | 37.94 |
| Karnataka | 21.55 | 13.53 | 17.82 | 15.47 | 12.43 | 14.67 | 6.90 | 8.24 | 1194 | 66.82 | 12.33 |
| Tamil Nadu | 5.41 | 5.49 | 3.31 | 3.06 | 2.44 | 2.47 | 3.11 | 3.59 | 1156 | 27.49 | 13.07 |
| Rajasthan | 9.31 | 5.18 | 6.74 | 1.35 | 7.27 | 5.09 | 5.93 | 4.20 | 709 | 69.38 | 6.06 |
| Andhra Pradesh | 11.9 | 8.51 | 6.77 | 6.19 | 2.54 | 3.07 | 1.20 | 4.10 | 3428 | 24.82 | 9.78 |
| Uttar Pradesh | 5.27 | 4.93 | 3.47 | 3.3 | 2.01 | 2.07 | 2.11 | 2.83 | 1349 | 46.39 | 6.11 |
| Madhya Pradesh | 16.48 | 14.9 | 6.38 | 4.6 | 4.32 | 6.16 | 1.42 | 2.17 | 1529 | 58.39 | 3.72 |
| Other states | 10.34 | 4.79 | 3.13 | 1.45 | 2.21 | 1.98 | 4.36 | 3.45 | - | 132.74 | 4.10 |
| India | 143.57 | 116.8 | 98.56 | 75.29 | 73.82 | 70.03 | 43.95 | 47.8 | 1088 | 511.50 | 9.34 |

* provisional figures, yet to be finalised (Andhra Pradesh figures from Final Advance Estimates, 2020-21)

Source: indiastat.com, agricoop.nic.in.

Table 2 shows the state-wise area, production, and yield of sorghum from 1990-91 to 2020-21. The results showed that the contribution of sorghum to total coarse cereals is 9.34

ANGRAU Sorghum Outlook Report-January to December 2021

per cent in 2020-21. Over the decades, there has been a decline in cultivated area under sorghum since farmers are shifting to more profitable cereals (rice, wheat, corn), pulses and competing crops (oilseeds and cotton). Maharashtra is the largest producer, contributing 34.53 percent of the total production of sorghum, followed by Karnataka (18.95%) and Rajasthan (8.26%). Andhra Pradesh contributes 5.58 per cent to total sorghum production. It is worth mentioning that, the productivity of sorghum is recorded very high compared to other states of India, due to the commercial ways of cultivation.

Table 3: Area, production and yield of Sorghum in Andhra Pradesh

| Year | Area ('000 ha) | Production ('000 tonnes) | Yield (Kg/ha) |
|----------|----------------|--------------------------|---------------|
| 2010-11 | 254 | 307 | 1211 |
| 2015-16 | 174 | 357 | 2049 |
| 2018-19 | 135 | 300 | 2230 |
| 2019-20 | 115 | 389 | 2510 |
| 2020-21 | 120 | 410 | 3428 |
| 2021-22* | 110 | 348 | 3164 |

* Second Advance estimates, 2021-22 Source: www.desap.gov.in

Table 3 shows that the sorghum acreage in Andhra Pradesh before bifurcation was 2.54 lakh hectares, which has come down to 1.10 lakh hectares in 2021-22, and production has been increased from 3.07 to 3.48 lakh tonnes during 2010-11 to 2021-22, which can be attributed to increased productivity levels due to hybrids that are being grown under irrigation in some areas of Guntur district of Andhra Pradesh. Sorghum cultivation is declining, with area shifting to more profitable crops. Over the years, human consumption has also declined due to the availability of fine cereals through the Public Distribution System (PDS). Sorghum production is mostly under unirrigated conditions and fluctuates yearly depending on the monsoon's performance. With rising supplies of subsidised rice and wheat through India's food security programs, consumers are shifting away from sorghum and millet, eroding these crops' profitability.

Table4: District wise area and production of Sorghum in Andhra Pradesh (2019-20)

| District | Area ('000 ha) | Position | Production ('000 tonnes) | Position | Yield (kg/ha) | Position |
|-----------------------|----------------|----------|--------------------------|----------|---------------|----------|
| Guntur | 40 | 2 | 240 | 1 | 5962 | 1 |
| Kurnool | 55 | 1 | 94 | 2 | 1705 | 2 |
| Kadapa | 20 | 4 | 25 | 3 | 1300 | 4 |
| Ananthapur | 30 | 3 | 19 | 4 | 642 | 6 |
| Prakasam | 8 | 5 | 7 | 5 | 821 | 5 |
| Nellore | 1 | 6 | 1 | 6 | 1444 | 3 |
| Other districts | 1 | | 3 | | | |
| Andhra Pradesh | 155 | | 389 | | 2510 | |

ANGRAU Sorghum Outlook Report-January to December 2021

Source: apagrisnet.gov.in

Table 4 shows that in Andhra Pradesh, sorghum production is highest in Guntur district with 2.4 lakh tonnes in 0.4 lakh hectares, followed by Kurnool and Kadapa. The productivity of sorghum is highest in the Guntur district (grown as an ID crop) with 5962 kg/ha, followed by Kurnool and Nellore.

Table 5: Cost-return structure of Sorghum in Krishna Zone 2020-21 (Rs./ha)

| S NO | Particulars | Sorghum |
|------|------------------------------|--------------|
| 1 | Labour costs (Rs/ha) | 17024(34.41) |
| 2 | Material costs(Rs/ha) | 20102(40.63) |
| 3 | Variable costs(Rs/ha) | 37126(75.04) |
| 4 | Fixed costs(Rs/ha) | 12350(24.96) |
| 5 | Total cost(Rs/ha) | 49476(100) |
| 6 | Yield (Qtl/ha) | 30.25 |
| 7 | Price (Rs./qtl) | 2330 |
| 8 | Gross returns (Rs/ha) | 70483 |
| 9 | Net returns (Rs/ha) | 21007 |
| 10 | Gross Margin (Rs/ha) | 33357 |
| 11 | Return on rupee BCR | 1.42 |
| 12 | Return on VC | 1.90 |
| 13 | Cost of Production (Rs./qtl) | 1635.57 |

Source: Survey Data, Figures in the parentheses indicate the per cent of the item to the total cost, BCR-Benefit Cost Ratio, VC – Variable Costs

The cost-return structure of sorghum in Krishna Zone (Guntur, Prakasam and Krishna districts) of Andhra Pradesh for the year 2020-21 is presented in Table 5. Cost of Production of sorghum was Rs. 1635.57/quintal. Gross margin implies the returns over variable costs which is pertained to owner farmers and net returns implies returns over the total costs which is pertained to tenant owners. Gross margin and Net returns were Rs. 33357 per ha and Rs. 21007 per ha respectively. Return on rupee investment was 1.42 which is concerned to tenant farmers and return on variable costs was 1.90 which is more related to owner farmers.

Sorghum Price Outlook:

Seasonal indices measure the monthly per cent deviation from the average arrivals and prices for 2020-21. For calculating seasonal indices, modal prices of sorghum from major markets in Kurnool district were taken.

Table 6: Seasonal indices of Sorghum arrivals and prices in major markets of Kurnool district in Agricultural Year 2020-21

| Months | Arrivals | Price |
|--------|----------|-------|
|--------|----------|-------|

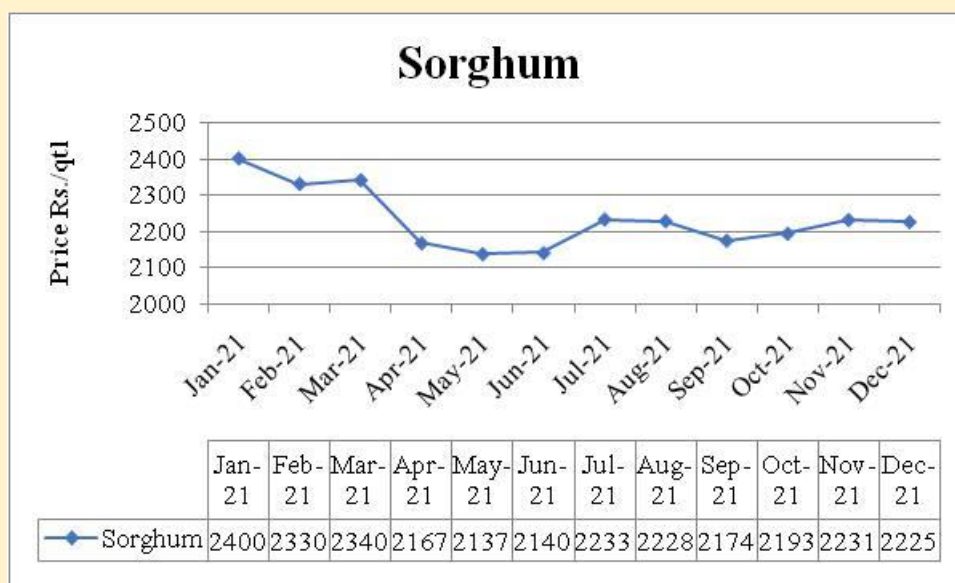
ANGRAU Sorghum Outlook Report-January to December 2021

| | | |
|------------------|--------|--------|
| June | 80.84 | 102.37 |
| July | 70.38 | 102.71 |
| August | 109.06 | 100.29 |
| September | 102.09 | 103.39 |
| October | 105.57 | 106.03 |
| November | 102.09 | 106.11 |
| December | 109.06 | 102.29 |
| January | 109.06 | 98.89 |
| February | 98.61 | 96.09 |
| March | 98.61 | 98.93 |
| April | 105.57 | 92.06 |
| May | 109.06 | 90.82 |

Source: Data obtained from AMCs of major markets of Kurnool district

The seasonal indices of sorghum arrivals and prices from major markets in Kurnool district (Allagadda, Alur, Banaganapalli, Koilkunta, Nandyala) presented in Table 6 show that the arrivals are highest in the months of December and January, and the prices are highest in the months of October & November. The figure 2 shows the monthly average prices of sorghum in Andhra Pradesh.

Figure 2: Average monthly prices of Sorghum in Andhra Pradesh



Source: Data obtained from agmarknet.gov.in

As on 3rd December 2021, 33.60 lakh hectares of sorghum was sown compared to 36.04 lakh hectares last year in India (agricoop.nic.in). In Andhra Pradesh as on 29th December 2021, 0.42 lakh hectares of sorghum was sown compared to 0.55 lakh hectares last year (apagrisnet.gov.in).

ANGRAU Sorghum Outlook Report-January to December 2021

Under these circumstances, the Agricultural Marketing Intelligence Centre (AMIC), ANGRAU is here with providing the latest information with regard to the forecast price range of Rs. 2050 - 2350 per quintal for sorghum in this Rabi marketing/harvesting season 2021-22.
