An Economic Analysis of Sorghum to Estimate Marketing Channels, Marketing Cost, Marketing Margin and Price Spread in Each Channel of Distribution in Kurnool District of Andhra Pradesh

M. Mounika* and Mukesh Kumar Maurya**
*Author, **Assistant Professor,
Deptartment of Agricultural Economics, SHUATS, Prayagraj, Uttar Pradesh, India
*Corresponding Author E-mail: mounivijay50@gmail.com
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ABSTRACT
The study is on marketing cost, marketing margin and price spread in each channel of distribution of Sorghum in Kurnool district of Andhra Pradesh. The study was carried out in both conventional and functional analyses were employed to analyze the data and to arrive at valid conclusions. The data was collected using well structured questionnaire from three different marketing channels.
Channel I: Producer → Consumer
Channel II: Producer→ Village merchant/Retailer→ Consumer
Channel III: Producer→ Commission agent → Wholesaler → Consumer
Finally the data is analyzed using a tabulation method along with a statistical tool.
Keywords: Sorghum, Marketing cost, Marketing margin, Price spread.

INTRODUCTION
Sorghum (Sorghum bicolor), being a tropical crop as its history related to the hot and humid areas of the world. The cereal grain is said to have originated around the Ethiopia as a wild grass as early as 8000 years ago. The cereal crop, once adopted and cultivated, spread across the African continent especially the regions of Egypt and Sudan. Sorghum marked its entry to the Asian continent in the first millennium. The weather conditions in the continent suited for the plantation. It is found in the arid and semi-arid parts of the employment world due to its feature of being extremely drought tolerant. Sorghum is suitable to tropical as well as temperate climates, although it is best known for its good adoption to the drought prone semi-arid tropical (SAT) regions of the world.

Sorghum, (sorghum bicolor) is an annual or perennial grass in the family poaceae grown primarily for its grain.
Sorghum has an erect solid stem with one or more tillers (additionally suit that grows subsequent to the parent suit) and curving leaves which are arranged alternately on the stems and are lance-like in shape, measuring 30 - 135 cm (12-53) in length. The inflorescence of the plant consists of racemes of spikelets arranged on branches at the head of the plant. The spikelets are paired and have two florets. When the plant flowers, yellow anthers begin to appear on the head. Sorghum is usually grown as an annual, harvested after one growing season and can grow to a height of 4 m (13 ft). Sorghum may also be referred to as broom corn in Ethiopia. Sorghum is also called as great millet, Indian millet, milo, durra, or shalhu, cereal grain plant of the grass family and its edible starchy seeds. In India, sorghum is known as jowar, cholam, or jonna. In West Africa, as Guinea corn, and in China as Kaoliang. Hence, jowar is commonly called as a great millet belonging to Graminae and 5th most important crop sorghum is gaining importance because of their benefits to health use to reduce sugar levels for diabetic patients.

MATERIALS AND METHODS
The study was conducted in Kurnool district of Andhra Pradesh which is one of the 13 districts of A.P. Kurnool district comprising 54 blocks among 1 block was selected, i.e., Banaganapalli and Kovelakunta block was selected for the study. A list of 4 villages were selected randomly out of them. A list of all Sorghum farmers/respondents is prepared with the help of head of the villages pradhan or head of each selected villages in the both block, there after farmers/respondents is categorized into categories on the basis of their land holding and then from each village 10% farmers were selected randomly from all the different size of farm groups.

Data for the study was collected from all 100 farmers randomly i.e., 50 marginal farmers, 35 small farmers, 15 medium farmers. Tabulation method is used for analysis of data along with required statistical tools for the interpretation of the results.

RESULTS AND DISCUSSION
The study was conducted in Kurnool district of Andhra Pradesh. The necessary data were collected from the sample farmers spread over two block in the above mentioned district. The present chapter is going to talk about the results and discussion for various objectives. The chapter is arranged in different sub-section according to objectives of the study.

Marketing cost
The total cost incurred on marketing by various intermediaries involved in the sale and purchase of the commodity till it reaches the ultimate consumer was computed as follow:

\[ C = C_f + C_{m1} + C_{m2} + C_{m3} + \ldots + C_{mn} \]

Where,

- \( C_f \) = Total cost of marketing
- \( C_{mi} \) = Cost incurred by the \( i^{th} \) middlemen in the process of buying and selling.

Marketing margin
This referred to the net share to the different marketing intermediaries for particular quantity of produce after deducting marketing costs from gross marketing margins at each stage of handling the commodity.

- Absolute margin = \( PR_i - (P_{pi} + C_{mi}) \)
- Percent margin = \( \frac{P_{pi} + C_{mi}}{PR_j} \)

Where,

- \( PR_i \) = Sale price of the middleman
- \( P_{pi} \) = Purchase price of the middleman
- \( C_{mi} \) = Marketing cost Incurred by the middleman
Producer’s share in Consumer’s Rupee

\[ Ps = \frac{P_f}{P_c} \times 100 \]

Where,

- \( P_s \) = Producer’s share in Consumer’s Rupee
- \( P_f \) = Price of the produce received by the farmer
- \( P_c \) = price of the produce paid by the consumer

**Price spread**

It was calculated by taking difference between the price paid by the consumer and the price received by the producer.

\[ \text{Price Spread} = \text{Total Marketing Cost} + \text{Total Marketing Margin} \]

**Marketing channels**

Channel I: Producer → Consumer
Channel II: Producer→ Village merchant/Retailer→ Consumer
Channel III: Producer→ Commission agent → Wholesaler → Consumer

Table 1: Comparison of total marketing cost, total marketing margin, price spread, producer share in consumer rupee (%) and marketing efficiency in three different channels.

| S. No. | Particulars | Value (Rs/quintal) |
|--------|-------------|--------------------|
| 1      | Producer sale price | 2550 | 2550 | 2550 |
| 2      | Cost incurred by the producer | | | |
|        | Packing cost | 5 (0.16) | 5 (0.13) | 5 (0.13) |
|        | Packing material cost | 7.5 (0.24) | 7.5 (0.20) | 7.5 (0.19) |
|        | Transportation cost | 20 (0.65) | 20 (0.59) | 20 (0.53) |
|        | Market cost | 8 (0.26) | 8 (0.22) | 8 (0.21) |
|        | Labour cost | 5 (0.16) | 5 (0.14) | 5 (0.13) |
|        | Loading and unloading charges | 10 (0.32) | 10 (0.27) | 10 (0.26) |
|        | Weighing charges | 5 (0.16) | 5 (0.13) | 5 (0.13) |
|        | Miscellaneous charges | 3 (0.09) | 3 (0.08) | 3 (0.08) |
|        | Total cost | 63.5 (2.05) | 63.5 (1.73) | 63.5 (1.69) |
| 3      | Net price received by producer | 2486.5 (80.21) | 2486.5 (67.94) | 2486.5 (65.99) |
| 4      | Sale price of producer to commission agent | 3100 (100) | 3100 (84.70) | 3100 (82.27) |
| 5      | Cost incurred by the commission agent | | | |
|        | Loading and unloading charges | 10 (0.32) | 10 (0.27) | 10 (0.26) |
|        | Packing cost | 5 (0.16) | 15 (0.13) | 5 (0.13) |
|        | Market fee | 8 (0.26) | 8 (0.21) | 8 (0.21) |
|        | Commission of trader | | | |
|        | Losses & Miscellaneous charges | 3 (0.09) | 5 (0.13) | 5 (0.13) |
|        | Total cost | 63.5 (2.05) | 60 (1.64) | 58 (1.54) |
| 6      | Margin of commission agent | | | |
| 7      | Sale price of commission agent to wholesaler | 3100 (100) | 3100 (84.7) | 3768 (100) |
| 8      | Cost incurred by wholesaler | | | |
|        | Weighing charges | 5 (0.16) | 5 (0.13) | 5 (0.13) |
|        | Loading and unloading charges | 10 (0.32) | 10 (0.27) | 10 (0.26) |
|        | Town charges | | 25 (0.68) | 25 (0.68) |
|        | Carriage up to shop | | 15 (0.41) | 15 (0.40) |
|        | Miscellaneous charges | 8 (0.26) | 5 (0.13) | 5 (0.13) |
|        | Total cost | 20 (0.65) | 60 (1.64) | 60 (1.59) |
| 9      | Wholesalers Margin | | | |
| 10     | Sale price of wholesaler to consumer | | 3660 (100) | 3768 (100) |
| 11     | Price spread | 550 (17.74) | 1110 (30.33) | 1218 (32.32) |
| 12     | Consumer paid price | 6365 | 3660 | 3768 |
| 13     | Producer share in consumer rupee | 89.21 | 61.94 | 65.99 |
| 14     | Marketing Efficiency (in %) | 4.52 | 2.24 | 2.04 |
Table 2: Comparison of total marketing cost, total marketing margin, price spread, producer’s share in consumer rupee (%) and marketing efficiency in three different channels among chickpea growers with different size of farm

| S. No. | Particulars                              | Channel – I | Channel – II | Channel – III |
|-------|------------------------------------------|-------------|--------------|---------------|
| 1     | Total marketing cost                     | 63.5        | 123.5        | 121.5         |
| 2     | Total marketing margin                   | 550         | 1050         | 1550          |
| 3     | Price spread                             | 550         | 1110         | 1218          |
| 4     | Producers share in consumer rupee (%)    | 80.21       | 67.94        | 65.99         |
| 5     | Marketing efficiency                     | 4.52        | 2.24         | 2.04          |

From the above table it revealed that through channel-I, the total marketing cost was Rs.63.5/q, total marketing margin Rs.550/q, price spread Rs.680/q, producers share in consumer rupee (%) was 89.54 with a marketing efficiency 9.55. Through channel – II, the total marketing cost was Rs.123.5/q, total marketing margin Rs.1050/q, price spread Rs.1240/q, producer’s share in consumer rupee (%) was 82.44 with a marketing efficiency 5.69. Through channel – III, the total marketing cost was Rs.121.5/q, total marketing margin Rs.1550/q, price spread Rs.1550/q, and producer’s share in consumer rupee (%) was 79.18 with a marketing efficiency 4.08.

Table 3: ANOVA for marketing cost, marketing margin, price spread, producer’s share in consumer rupee (%) and marketing efficiency among sorghum farmers with different size of farm

| Source       | D f | Sum of squares | Mean sum of squares | F Cal | F Tab 5% | Result | S. Ed. (±) | C. D. 5% |
|--------------|-----|----------------|--------------------|-------|----------|--------|-----------|----------|
| Size group   | 2   | 35813728.84    | 62956314.42        | 4.10  | 5.88     | NS     | 329.253   | 827.54   |
| Particular   | 4   | 1598377875.72  | 215893775.72       | 3.59  | 4.46     | NS     | 380.273   | 645.257  |
| Error        | 8   | 55624902.17    | 59779357.82        |       |          |        |           |          |
| TOTAL        | 14  |                |                    |       |          |        |           |          |

From table 3, it can be evident that the size of the group was 2 with the degrees of freedom, particulars was 4 with an error value of 8, accounting to a total of 14. The sum of squares of the group size was 35813728.84 which has mean sum of squares 62956314.42. The F Cal was 4.10 whereas F Tab at 5% level of significance was 5.88, it revealed that F Cal was lesser than F Tab and depicts that it was non-significant with Standard deviation value of 329.253 and Critical Difference at 5% 645.257.

CONCLUSION

- Cropping pattern on sample farms shows that on an average in season sorghum occupied highest area 64.20 percent followed by sorghum.
- In respect of market efficiency, channel I was found most efficient over channel II and channel III, because there is no anyone middlemen engaged in this marketing channel. The marketing efficiency decreased with increase in the number of intermediaries.
- The village trader are the main market functionaries for purchasing sorghum from the farmers in the study.
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