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Estimation of growth and marketing pattern of major pulses in Rajnandgaon district of Chhattisgarh

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Abstract

Background: The study is based on “An economic analysis of production and marketing of major pulses in Rajnandgaon district of Chhattisgarh”. The decision-making process of the required minimum of 100 respondents will be done via random proportionate sampling.

Method: Primary information will be gathered from a few key pulse growers. Utilizing pre-tested questionnaires, data will be gathered through the personal interview approach. Various government departments, including the Department of Agriculture, the Directorate of Economics and Statistics, the Government of Chhattisgarh, and other sources, will be used to gather the secondary data.

Result: In India, the CGAR for gram output was 2.57%, 4.33%, and 1.17%, and the CGAR for lentil production was -0.21%, 2.64%, and 2.87%, respectively. In Chhattisgarh, the CGAR for gram output, area, and productivity were respectively 3.03%, 6.04%, and 2.89%; the CGAR for lentil production, area, and productivity was -1.05%, 0.83%, and 1.91%. In Rajnandgaon, the CGAR for gram production, area, and productivity were 7.38%, 11.62%, and 3.93%, respectively, while the CGAR for lentil production, area, and productivity was 4.25%, 5.34%, and 1.04%. Grams had a 5.14 qt. (78.67%) overall marketable surplus. 1.62 qt. (797%) of lentils were marketable overall. Grams were often disposed in the following proportions: 52.49 percent to mandis, 12.25 percent to consumers, and 36.12 percent to neighborhood dealers. The disposal of lentils overall was as follows: 23.24 percent to mandi, 27.63 percent to consumers, and 49.11 percent to local dealers.

Keywords: CGAR, marketable surplus, disposable pattern, lentil, gram, pulses

Introduction

India is the largest producer and consumer of pulses. The demand for pulses in India is considerable for the global economy. About 24% of the world's production of pulses and 30% of imports come from India. Following a decade-long decline in pulse production from the 1960s to the 1990s, India has only produced pulses in two fields for the past 15 years. India produced roughly 23 MT of pulses in 2017. Uttar Pradesh (2.40 MT), Rajasthan (3.68 MT), and Madhya Pradesh (7.81 MT) were the three additional developing states in India in 2019. Absolute pulse production in Chhattisgarh was 0.54 MT.

The global production of pulse increased by more than 20 MT between 2001 and 2014, roughly. This increase was virtually a doubling of the production of beans, grains, cow peas, and maize. During the same time frame, the annual production of gram was 5 million tons, while the annual production of masoor was 1.6 million tons. South Asia and sub-Saharan Africa together account for around a share of the world's total production of pulses, although being present in all regions. Sub-Saharan Africa contributed 24% of the world's dry bean production in 2012–14, followed by Latin America and the Caribbean (24%), Southeast Asia (18%), and South Asia (17%).

Materials and Methods

Gram and lentil

India is the world's largest producer of grams, accounting for 65% and 70%, respectively, of the total global region and production. Desi gram/earthy colored gram (*Cicer arietinum*): Most generally developed, tremendous stretching, 2n=14 and 16. There are two groups of Indian gram. (b) Kabuli/white gram (*Cicer kabulium*), which has a robust seed but poor yield and taller growth. Masoor, also known as lentil (*Lens esculantum*), is a type of pulse that originated in South Iran and Turkey. It is frequently utilized for soil fertility, animal feed, and human nutrition. The world's major producers of lentils are Bangladesh, Nepal, Bangladesh, Canada, Turkey, and Turkey.

Objectives

1. To examine growth rate of Area, Production and Productivity of major pulses in Rajnandgaon district of Chhattisgarh.
2. To analyze the marketing pattern of major pulses in the study area.

Analytical tools

The simple averages and percentage statistical tools were applied to represent the results of study.

To analyze the pattern of growth in area, production and productivity of major crops in study area, Compound Growth Rate (CGR) was computed. The details of the formulae given as under:

Compound growth Rate

$$Y = A B^t$$

Taking log on both sides

$$\log Y = \log A + t \log B$$

Assuming, $\log Y = y$, $\log A = a$, $\log B = b$

We get, $y = a + bt$

Where, $t = 1, 2, 3, \dots, n$

$y = \text{area/production/productivity of crops.}$

After regression between y and t we have value of a and b

Where, $a = \text{Constant}$, $b = \text{regression coefficient}$

$$As, b = 1 + r$$

$$\text{Hence, } r = b - 1$$

Therefore,

$$r = (\text{Anti-log of } b - 1) \times 100$$

Where,

$r = \text{Compound growth rate}$

Marketing pattern

Marketable surplus

It is actual quantity of a commodity, which is available with the farmers after meeting his requirement is the marketable surplus, it is computed by use of following mathematical model:

$$MS = P - (C+S)$$

Where, MS = Marketable surplus P = Total production C = Family consumption S = Quantity kept for seed.

Disposal pattern

To examine the marketing pattern of major pulses at different categories of farms, simple analysis was done. To estimate the marketable surplus of produce, total quantity used for different purposes is deducted from total production of crop. This marketable surplus are dispose or sell in difference place (mandi, consumer, broker etc.) that is disposable pattern. Disposable pattern= mandi, consumer, broker etc.

Results and Discussion

To examine growth rate of Area, Production and Productivity of major pulses in India Chhattisgarh, Rajnandgaon

Red gram production, area, and productivity in India were respectively 2.11%, 3.37%, and 1.23%; gram production, area, and productivity were 2.57%, 4.33%, and 1.72%; and lentil production, area, and productivity were -0.21%, 2.64%, and 2.87%

In Chhattisgarh, the CGARs for area, production, and productivity of red gram were 0.79%, 1.99%, and 1.26%; for gram, they were 3.03%, 6.04%, and 2.89%; and for lentils, they were -1.05%, 0.83%, and 1.91%, respectively.

Red gram production, area, and productivity in Rajnandgaon were, respectively, 13.54%, 16.82%, and 2.87%; gram production, area, and productivity were 7.38%, 11.62%, and 3.93%; and lentil production, area, and productivity were 4.25%, 5.34%, and 1.04%.

Table 1: Compound annual growth rate of major pulses (in %)

S. No.	Particular	area	Production	Productivity
A	India			
2	Gram	2.58**	4.34**	1.72**
3	Lentil	-0.22**	2.65**	2.87**
B	Chhattisgarh			
2	Gram	3.03**	6.04**	2.9**
3	Lentil	-1.06**	0.84**	1.92**
C	Rajnandgaon			
2	Gram	7.38**	11.63**	3.93**
3	Lentil	4.25**	5.35**	1.05**

Note: (**) Significant at 1% level of significance

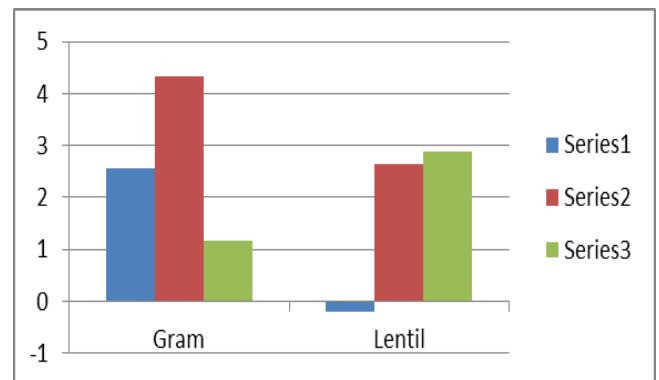


Fig 1: In India, CGAR of area, production and productivity of gram and lentil

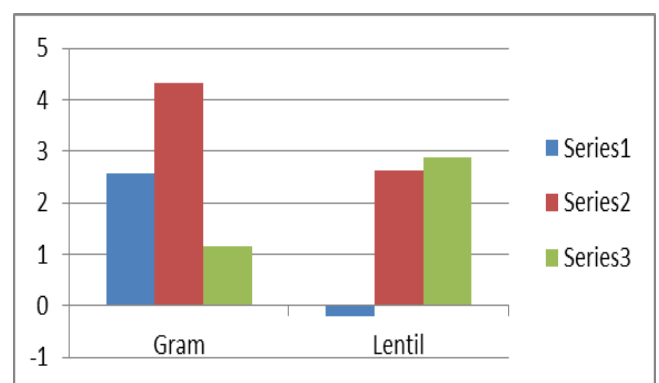


Fig 2: In Chhattisgarh, CGAR of area, production and productivity of gram and lentil

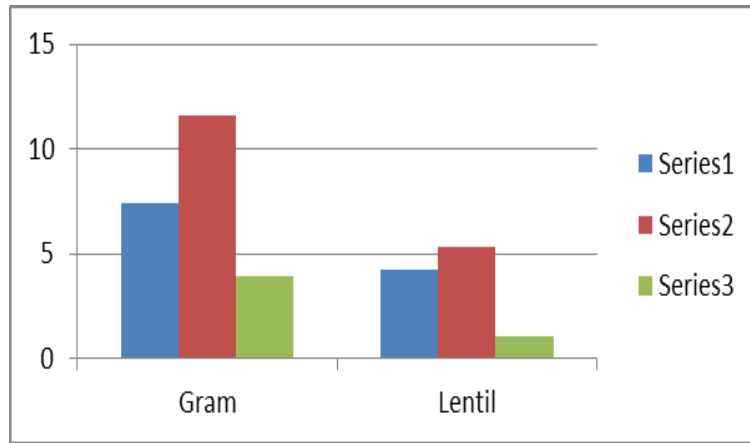


Fig 3: In Rajnandgaon, CGAR of area, production and productivity of gram and lentil

Marketable surplus of gram

Overall marketable excess of grams was 5.14 qt. (78.67%), as shown in the table below. For marginal, small, medium, and large, the marketable surplus was 1.02 qt (53.12%), 2.02 qt

(60.84%), 4 qt (71.17%), and 20.51 qt (91.31%), respectively. 6.54 qt were produced overall, along with 0.83 qt of leftover seeds and 0.56 qt of consumption.

Table 2: Marketable surplus of gram (Farm/qt)

S. No.	Particular	Marginal	Small	Medium	Large	Overall
1	Total Production	1.92 (100.00)	3.32 (100.00)	5.62 (100.00)	22.46 (100.00)	6.54 (100.00)
2	Retain for seed	0.6 (31.25)	0.8 (24.09)	0.92 (16.37)	1.05 (4.67)	0.83 (12.72)
3	Consumption	0.3 (15.62)	0.5 (15.06)	0.7 (12.45)	0.9 (4.00)	0.56 (8.68)
4	Total quantity used	0.9 (46.87)	1.3 (39.15)	1.62 (28.82)	1.95 (8.68)	1.4 (21.40)
5	Marketable surplus	1.02 (53.12)	2.02 (60.84)	4 (71.17)	20.51 (91.31)	5.14 (78.67)

Note: Figure in the parentheses indicates the percentage to the total quantity produced

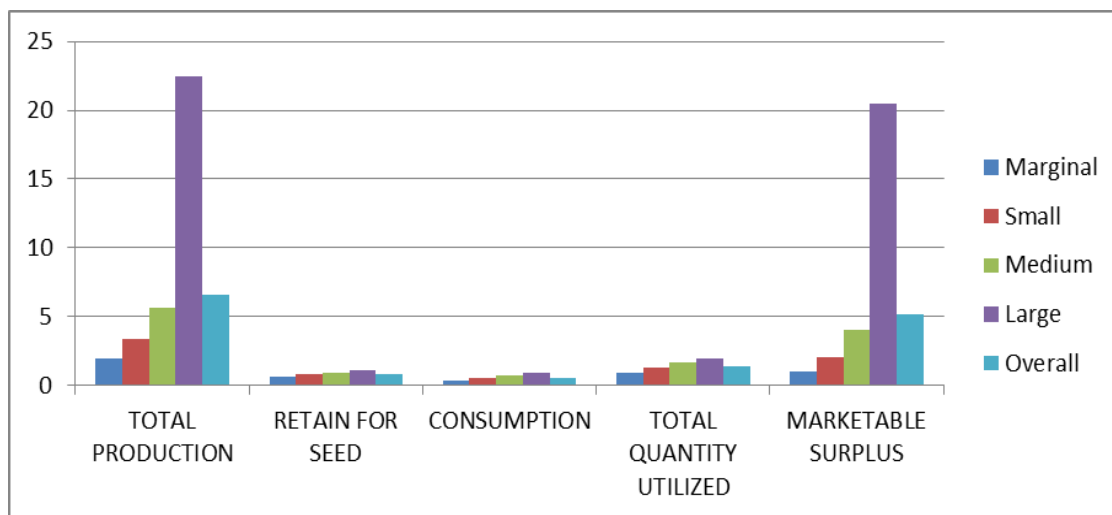


Fig 4: Marketable surplus of gram

Marketable surplus of lentil

Overall marketable excess of lentils was 1.62 qt. (79.71%), as seen in the table below. For marginal, small, medium, and big, the marketable surplus was 0.45 qt (75%), 1.23 qt

(79.87%), 1.85 qt (77.08%), and 3.78 qt (81.29%), respectively. Overall, there were 2.04 qt of total production, 0.29 qt of leftover seeds, and 0.12 qt of consumption.

Table 6: Marketable surplus of lentil (Farm/qt)

S. No	Particular	Marginal	Small	Medium	Large	Overall
1	Total production	0.6 (100.00)	1.54 (100.00)	2.4 (100.00)	4.65 (100.00)	2.04 (100.00)
2	Retain for seed	0.03 (5.00)	0.21 (13.63)	0.42 (17.5)	0.67 (14.40)	0.29 (14.26)
3	Consumption	0.12 (20.00)	0.1 (6.49)	0.13 (5.41)	0.2 (4.30)	0.12 (6.02)
4	Total quantity used	0.15 (25.00)	0.31 (20.12)	0.55 (22.91)	0.87 (18.70)	0.41 (20.28)
5	Marketable surplus	0.45 (75.00)	1.23 (79.87)	1.85 (77.08)	3.78 (81.29)	1.62 (79.71)

Note: IFIGUREIINI the parentheses indicates the percentage to the total quantity produced

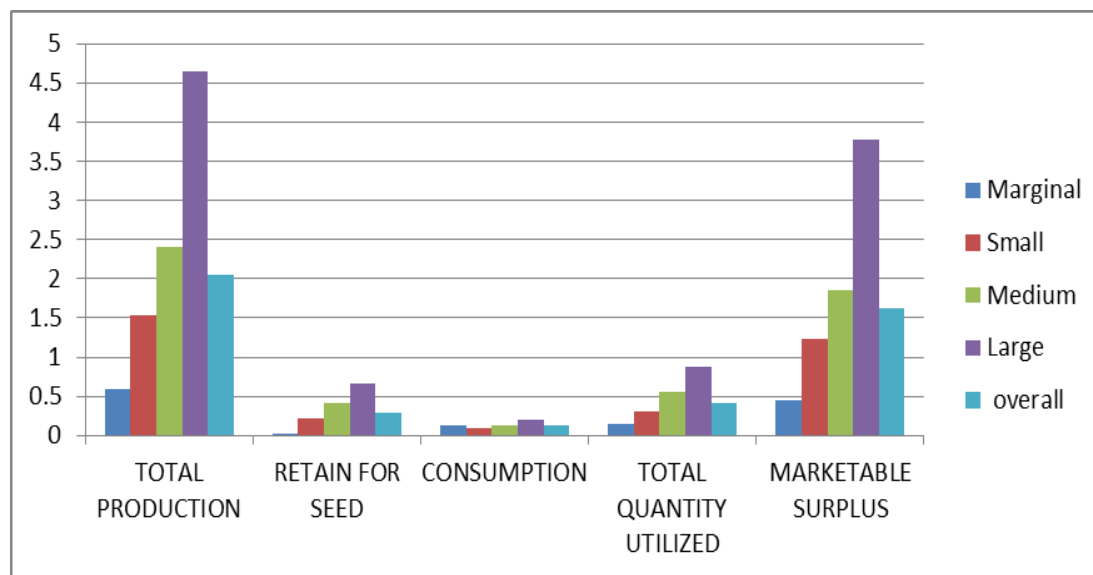


Fig 5: Marketable surplus of lentil

Disposable pattern of major pulses

Disposable pattern of gram

Disposable pattern of gram is presented in table. Overall

disposable pattern for gram were 52.49 percent to mandi, 12.25 percent to consumer and 36.12 percent to local traders.

Table 7: Disposable pattern of gram (Farm/qt)

S. No	Particular	Marginal	Small	Medium	Large	Overall
1	Marketable surplus	1.02 (100.00)	2.02 (100.00)	4 (100.00)	20.51 (100.00)	5.14 (100.00)
2	Mandi	0 (00.00)	0 (00.00)	1.73 (43.25)	15.26 (74.40)	2.70 (52.49)
3	Consumer	0.4 (39.21)	0.3 (14.85)	0.7 (17.5)	1.91 (9.31)	0.63 (12.25)
4	Local trader	0.62 (60.78)	1.8 (89.10)	1.57 (39.25)	3.34 (16.28)	1.85 (36.12)

Note: Figure in the parentheses indicates the percentage to the total quantity dispose

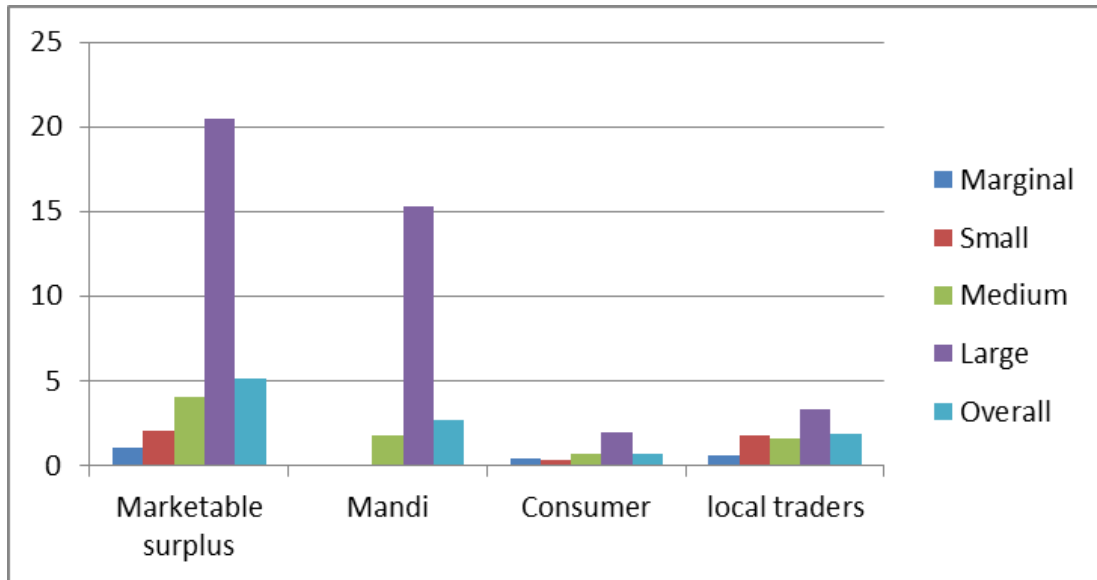


Fig 6: Disposable pattern of gram

Disposable pattern of lentil

Disposable pattern of lentil is presented in table. Overall

disposable pattern for lentil were 23.24 percent to mandi, 27.63 percent to consumer and 49.11 percent to local traders.

Table 8: Disposable pattern of lentil (Farm/qt)

S. No	Particular	Marginal	Small	Medium	Large	Overall
1	Marketable surplus	0.45 (100.00)	1.23 (100.00)	1.85 (100.00)	3.78 (100.00)	1.62 (100.00)
2	Mandi	0 (00.00)	0 (00.00)	0.84 (45.40)	1.58 (41.79)	0.37 (23.24)
3	Consumer	0.16 (35.55)	0.34 (27.64)	0.56 (30.27)	0.97 (25.66)	0.45 (27.63)
4	Local traders	0.29 (64.44)	0.89 (72.35)	0.45 (24.32)	1.23 (32.53)	0.80 (49.11)

Note: Figure in the parentheses indicates the percentage to the total quantity dispose

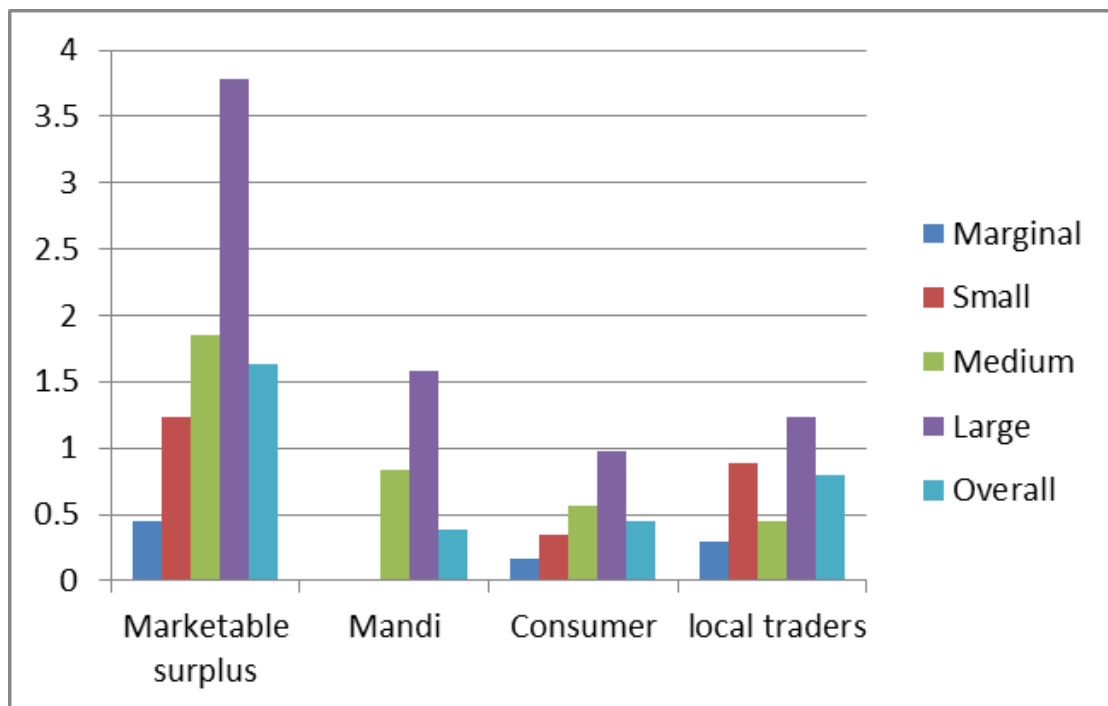


Fig 7: Disposable pattern of lentil

Conclusion

From the study area 100 sample farmers selected for research purposes, which was divided into 4 marginal, small, medium

and large categories farmers sub groups. Under these classes 13, 56, 15 and 16 farmers come in marginal, small, medium and large categories. There were average family members was

5.62. We observe overall percentage of age group were 22.77, 51.62 and 25.60 percent of the sample households for age group < 15, 15 to 60 and > 60, respectively.

Red gram production, area, and productivity in India were respectively 2.11%, 3.37%, and 1.23%; gram production, area, and productivity were 2.57%, 4.33%, and 1.72%; and lentil production, area, and productivity were -0.21%, 2.64%, and 2.87%. In Chhattisgarh, the CGARs for area, production, and productivity of red gram were 0.79%, 1.99%, and 1.26%; for gram, they were 3.03%, 6.04%, and 2.89%; and for lentils, they were -1.05%, 0.83%, and 1.91%, respectively. Red gram production, area, and productivity in Rajnandgaon were, respectively, 13.54%, 16.82%, and 2.87%; gram production, area, and productivity were 7.38%, 11.62%, and 3.93%; and lentil production, area, and productivity were 4.25%, 5.34%, and 1.04%.

Overall marketable surplus of grams was 5.14 qt. (78.67%), as shown. For marginal, small, medium, and large, the marketable surplus was 1.02 qt (53.12%), 2.02 qt (60.84%), 4 qt (71.17%), and 20.51 qt (91.31%), respectively. 6.54 qt were produced overall, along with 0.83 qt of leftover seeds and 0.56 qt of consumption. Overall marketable surplus of lentils was 1.62 qt. (79.71%). For marginal, small, medium, and large, the marketable surplus was 0.45 qt (75%), 1.23 qt (79.87%), 1.85 qt (77.08%), and 3.78 qt (81.29%), respectively. Overall, there were 2.04 qt of total production, 0.29 qt of leftover seeds, and 0.12 qt of consumption.

Overall disposable pattern for gram were 52.49 percent to mandi, 12.25 percent to consumer and 36.12 percent to local traders. Disposable pattern of lentil is presented in table. Overall disposable pattern for lentil were 23.24 percent to mandi, 27.63 percent to consumer and 49.11 percent to local traders.

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