An economic analysis of value addition of paddy into flakes rice and puffed rice in eastern Vidarbha zone in Maharashtra state

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DOI: https://doi.org/10.22271/chemi.2019.v7.i6av.8873

Abstract
The present study was conducted in four districts namely Bhandara, Gondia, Chandrapur and Gadchiroli in eastern vidarbha zone of Maharashtra state, to value addition in paddy crop and selected products were, flakes rice and puffed rice. Benefit cost ratios of these products were greater than one i.e. 1.46 and 1.34, respectively. Paddy (Oryza sativa) belongs to the genus Oryza and the family gramineae. It is one of the important cereal crop in the world after wheat. Rice is the most important staple food for large part of the world because it produces a good yield per unit area, grows well in a temperate climate. The value addition in processing of paddy in rice flakes was the highest in large size (Rs. 1954.25) followed by medium (Rs. 1852.62) and small (Rs. 1688.57) size rice flakes mills. In puffed rice mills, overall value addition was Rs. 1506.12. Whereas, in small and large size puffed rice mills the value addition was Rs. 1469.45 and Rs. 1541.74, respectively. The gross returns were the highest (Rs. 2286.83) in rice flakes. The cultivators earn a good profit from paddy and there is also advantage of value addition in paddy and it gives good profit to processor and farmer also.

Keywords: Value addition, Paddy, Break-even point, B: C ratio, fixed cost, Variable cost

Introduction
Processing and value addition are the important aspect for Paddy. In India, there is only cost addition no value addition in agricultural commodities. In developed countries, more than 80 per cent of the produce is processed. Value addition in agricultural products is one of the important means of creating time and form utility, adding value of the product and boosting up the demand and supply of food products. In Maharashtra paddy is the second important crop, which is grown over an area of 14.99 lakh hectares with an average paddy production of 32.37 lakh tonnes. The average productivity of the state is 2010 kg/ha. Maharashtra ranks 13th place in rice production in the country. The average production of Maharashtra state is low as compared to other rice growing states viz; Punjab, Tamil Nadu, Haryana, Andhra Pradesh, etc. (Anonymous, 2011) [1]. An economic analysis of processing industry is important from the point of view of development of processing industry. In view of this an attempt has been made to work out the value addition in paddy in eastern vidarbha zone. The specific objectives of this work are to assess the general profitability involved in value addition in rice processing.

Materials and Methods
Eastern vidarbha zone was purposively selected as majority of paddy processing units were concentrated in the area. Therefore Bhandara, Gondia, Chandrapur and Gadchiroli districts were selected.
Classification of rice flakes mills, puffed rice mills on the basis of their installed processing capacities

| Sl. No. | Size group | Installed processing capacity |
|---------|------------|------------------------------|
|         |            | Flakes rice mills (q/day)    | Puffed rice mills (q/day) |
| 1.      | Small      | 4.00                         | 1.50                      |
| 2.      | Medium     | 12.00                        | -                         |
| 3.      | Large      | 14.00                        | 2.00                      |

Distribution of samples of flakes rice and puffed rice mills

| Districts/taluka | Flakes rice mills | Puffed rice mills |
|------------------|-------------------|-------------------|
|                  | Small | Medium | Large | Total | Small | Medium | Large | Total |
| Bhandara         |       |        |       |       |       |        |       |       |
| a) Sakoli        | 1     | 1      | 3     | 5     | 3     | 3      | 6     |
| b) Tumars        | 2     | 1      | 2     | 5     | 2     | 4      | 6     |
| Total            | 3     | 2      | 5     | 10    | 5     | 7      | 12    |
| Gondia           |       |        |       |       |       |        |       |       |
| a) Gondia        | 3     | 2      | 1     | 5     | 4     | 2      | 6     |
| b) Gorgaon       | 1     | 1      | 3     | 5     | 2     | 4      | 6     |
| Total            | 4     | 3      | 4     | 10    | 6     | 6      | 12    |
| Chandrapur       |       |        |       |       |       |        |       |       |
| a) Chandrapur    | 2     | 1      | 3     | 5     | 4     | 2      | 6     |
| b) Mul           | 1     | 3      | 1     | 5     | 3     | 3      | 6     |
| Total            | 3     | 4      | 4     | 10    | 7     | 5      | 12    |
| Gadchiroli       |       |        |       |       |       |        |       |       |
| a) Gadchiroli    | 2     | 1      | 2     | 5     | 3     | 3      | 6     |
| b) Armori        | 1     | 2      | 2     | 5     | 4     | 7      | 6     |
| Total            | 3     | 2      | 4     | 10    | 7     | 5      | 12    |
| Total            | 13    | 12     | 17    | 40    | 25    | 23     | 48    |

Table 1: Average fixed capital investment in Flakes rice and puffed rice mills (Rs. / Lakhs)

| Sl. No. | Particulars | Flakes rice mills | Puffed rice mills |
|---------|-------------|-------------------|-------------------|
|         |             | Small  | Medium | Large | Overall | Small  | Medium | Large | Overall |
| 1.      | Land        | 0.68   | 0.89   | 1.32  | 0.96    | 0.68   | 0.89   | 1.32  | 0.96    |
| 2.      | Building    | 0.63   | 0.71   | 1.10  | 0.97    | 0.63   | 0.71   | 1.10  | 0.97    |
| 3.      | Machinery and equipments | 0.25 | 0.42  | 0.47  | 0.60    | 0.25   | 0.42   | 0.47  | 0.60    |
| 4.      | Miscellaneous expenditure | 0.017 | 0.031 | 0.043 | 0.067   | 0.017  | 0.031 | 0.043 | 0.067   |
| Total   | Total investment | 1.51  | 2.45   | 3.14  | 2.39    | 1.35   | 2.10   | 3.15  | 2.39    |

(Figures in parentheses indicate percentage to total investment)

It is revealed from the Table 1 that the average fixed capital investment in small, medium and large size flakes mills was Rs. 1.51 lakhs, Rs. 2.45 lakhs and Rs. 3.14 lakhs, respectively. In all categories of Flakes rice mills the investment in land and building was major item of the investment. Investment in land was 43.01 per cent in small mills followed by large 42.11 per cent and medium 36.32 per cent. While in building the highest investment was in medium rice flakes mills (45.07 per cent) followed by large (40.04 per cent) and small (39.97 per cent) rice flakes mills.

In puffed rice mills, the average fixed capital investment was Rs. 1.35 and 1.63 lakhs in small and large mills, whereas in overall the average fixed capital investment was Rs. 1.49 lakhs. The investment in land was accounted 50.50 per cent and 54.77 per cent in small and large mills respectively. While, in overall it was 52.84 per cent. Investment in building was the highest in small size puffed rice mills (36.44 per cent) followed by large (33.26 per cent) to the total investment.

Source of data
The primary data for the year 2011 related to processing of paddy were collected from selected processing units in a specially designed schedule by personal interview with the owners of processing units and their staff. Simple tabular analysis was done to complete the objectives.

Break-even analysis
Break -even point shows the minimum size of volume to recover the cost required after for processing in a year. Break even point for the paddy of different installed capacities was calculated with the following formula.

\[
\text{BEP} = \frac{\text{AFc}}{\text{Ps} - \text{Vc}}
\]

Where,
- BEP = Break Even Point
- AFc = Annual Fixed cost
- Ps = Selling price per quintal
- Vc = Variable cost per quintal

Results and Discussion
This study was carried out to examine the concept of value addition as it applies to rice production and processing in eastern vidarbha zone of Maharashtra state.

Processing of paddy for Flakes rice and puffed rice
From the Table 2 the quantity of obtained by Flakes rice processing of paddy was 58.97 per cent, 60.25 per cent and 60.05 per cent in small, medium and large size mills, respectively, whereas in overall, the quantity of flakes rice was 59.97 per cent. The by-products obtained were husk, bran and broken flakes rice which accounted 24.32 per cent, 6.32 per cent and 9.39 per cent in overall size group, respectively. It is observed that in overall puffed rice mills the plant were operated 219 days in a year and quantity of paddy processed was 690 quintals. The small size plants were operated for 215 days whereas, the large size puffed rice mills were operated for 232 days. It is observed that the total quantity of paddy processed for making puffed rice in large size mills was the highest (782 q) followed by small (598 q) size mills.
The quantity of puffed rice obtained in small size mills was (60.40 per cent) and in large size mills the quantity of puffed rice was (61.11 per cent). In overall size mills, the quantity of puffed rice was 60.79 per cent. The by-products viz; husk, bran and broken puffed rice were 170.77, 38.64 and 61.13 quintals which accounted 24.75 per cent, 5.60 per cent and 8.86 per cent in overall size groups, respectively.

3. Cost structure of Flakes rice and puffed rice mills

**Rice flakes mills**
From Table 3 it is observed that the per quintal total fixed cost per year of overall size groups of the flakes rice mill was Rs. 54594.34 and per quintal fixed cost of overall size group of the flakes rice mills was Rs. 30.56. The casual labour charges was the major item of fixed cost in all size groups of the flakes rice mills which accounted to Rs. 25800 (58.35 per cent) in small, Rs. 26760.00 (41.10 per cent) in medium and large Rs. 27840.00 (44.37 per cent) flakes mills, respectively. The casual labour charges was the major item of fixed cost for small and large puffed rice mills which shared 47.28 and 46.87 per cent of the total variable cost. The recurring per quintal fixed cost was investing proportional to the size of rice flakes mills and it was Rs. 25.71, Rs. 31.84 and Rs. 33.81 per quintal for small, medium and large size flakes mills.

**Puffed rice mills**
It is revealed from the Table 3 that total fixed cost in overall group of puffed rice mills was Rs. 28494.31 and per quintal fixed cost was Rs. 41.30. In large size puffed rice mills, total fixed cost was Rs. 29702.03. It is observed that the casual labour charges was the major item of fixed cost for small and large puffed rice mills which shared 47.28 and 46.87 per cent of the total fixed cost. The per quintal fixed cost for small and large puffed rice mills was Rs. 45.63 and Rs. 37.98, respectively.

### Table 2: Processing of paddy for rice flakes and puffed rice mills

| Sl. No. | Category of unit | Plant operated days / year | Quantity of paddy processed (q) | Quantity of different products obtained (q) | Plant operated days / year | Quantity of paddy processed (q) | Quantity of different products obtained (q) |
|---------|------------------|---------------------------|--------------------------------|------------------------------------------|---------------------------|--------------------------------|------------------------------------------|
| 1       | Small            | 215                       | 1720 (100.00)                 | 1014.28 (58.97) | 427.76 (24.87) | 100.97 (5.87) | 176.99 (10.29) | 215                          | 598 (100.00) | 361.19 (60.40) | 149.38 (24.98) | 33.07 (5.53) | 54.36 (9.09) |
| 2       | Medium           | 223                       | 1784 (100.00)                 | 1074.86 (60.25) | 428.87 (24.04) | 115.60 (6.48) | 164.67 (9.23) | -                           | -               | -               | -               | -               | -               |
| 3       | Large            | 232                       | 1856 (100.00)                 | 1114.53 (60.05) | 452.86 (24.40) | 117.12 (6.31) | 171.49 (9.24) | 232                          | 782 (100.00) | 477.88 (61.11) | 192.06 (24.56) | 44.34 (5.67) | 67.72 (8.66) |
| 4       | Overall          | 223                       | 1786 (100.00)                 | 1074.06 (59.97) | 434.36 (24.32) | 112.88 (6.32) | 167.30 (9.39) | 219                          | 690 (100.00) | 419.45 (60.79) | 170.78 (24.75) | 38.64 (5.60) | 61.13 (8.86) |

(Figures in parentheses indicate the percentage to the total quantity processed)

### Table 3: Annual fixed cost of rice flakes and puffed rice mills (Rs. /q)

| Sl. No. | Particulars               | Flakes Rice Mills | Puffed rice Mills |
|---------|---------------------------|------------------|------------------|
|         |                           | Small | Medium | Large | Overall | Small | Medium | Large | Overall |
| 1       | Depreciation on machinery | 3171.62 (7.17) | 5536.76 (9.74) | 6286.79 (10.02) | 4998.39 (9.16) | 2462.28 (9.02) | 2721.29 (9.16) | 2591.78 (9.10) |
| 2       | Depreciation on building  | 2523.21 (5.71) | 4258.92 (7.50) | 5173.56 (8.24) | 3985.23 (7.30) | 1660.52 (6.09) | 1850.54 (6.23) | 1755.53 (6.16) |
| 3       | Depreciation on furniture | 178.59 (0.40) | 312.05 (0.55) | 431.66 (0.69) | 307.43 (0.56) | 105.07 (0.38) | 108.54 (0.36) | 106.80 (0.37) |
| 4       | Interest on fixed capital | 9045.03 (20.45) | 13644.49 (27.54) | 18178.77 (28.97) | 14289.43 (26.17) | 6690.15 (24.52) | 7401.66 (24.92) | 7045.90 (24.73) |
| 5       | Casual labour charges     | 25800 (58.35) | 26760 (47.10) | 27840 (44.37) | 2680.00 (49.09) | 12900 (47.28) | 13920 (46.87) | 13410 (47.06) |
| 6       | Taxes and loan            | 3500.40 (7.92) | 4300.38 (7.57) | 4840.80 (7.71) | 4213.86 (7.72) | 3468.60 (12.71) | 3700.00 (12.46) | 3584.30 (12.58) |
| 7       | Per quintal fixed cost (per year) | 44218.85 (100.00) | 56812.60 (100.00) | 62751.58 (100.00) | 54594.34 (100.00) | 27266.62 (100.00) | 29702.03 (100.00) | 28494.31 (100.00) |
| 8       | Quantity of paddy processed | 1720 | 1784 | 1856 | 1786 | 598 | 782 | 690 |
| 9       | Fixed cost               | 25.71 | 31.84 | 33.81 | 30.56 | 45.63 | 37.98 | 41.30 |

(Figures in parentheses indicate percentage to total fixed cost)

### Variable cost of Flakes Rice mills
It is observed from Table 4 that the per quintal total variable cost in small, medium and large size mills was Rs 1438.73, Rs.1436.04 and Rs.1426.85, respectively and for overall size groups of flakes rice mills the per quintal variable cost was Rs. 1433.86. The expenditure on purchase of raw material was the major item of variable cost which shared 82.40 per cent for all size groups of flakes rice mills, respectively. The interest on working capital was another major item of variable cost which shared 10.71 per cent for all size groups of flakes rice mills. The cost of packing material was Rs. 23.20 per quintal in overall size groups of flakes rice mills which shared 1.62 per cent of the total variable cost.

### Variable cost of Puffed rice mills
It is evident from Table 4 that the per quintal average variable cost of puffed rice mills in overall size groups was Rs. 1429.04. In small puffed rice mill, the per quintal variable cost was Rs. 1437.62. The expenditure on purchase of raw material was the major item of the variable cost accounted to Rs.1185.00 (82.43 per cent). In large puffed rice mills, per quintal total variable cost was Rs. 1420.48. The cost of raw material was major item in large puffed rice mills which shared 82.40 per cent of the total variable cost. The recurring
Table 4: Variable cost of flakes rice and puffed rice mills (Rs/q)

| Sr. No. | Particulars       | Flakes Rice mills | Puffed rice mills |
|---------|-------------------|-------------------|------------------|
|         |                   | Small             | Medium           | Large            | Overall          | Small             | Medium           | Large            | Overall          |
| 1.      | Raw material      | 1193.48 (82.95)   | 1176.36 (81.92)  | 1165.10 (81.66)  | 1178.31 (82.18)  | 1185.00 (82.43)  | 1170.50 (82.40)  | 1177.75 (82.42) |
| 2.      | Casual labour     | 12.50 (0.87)      | 27.50 (1.91)     | 30.00 (2.10)     | 23.33 (1.63)     | 12.00 (0.83)     | 13.75 (0.97)     | 12.87 (0.91)   |
| 3.      | Oil and lubricants| 7.42 (0.52)       | 5.68 (0.40)      | 5.35 (0.38)      | 6.15 (0.43)      | 6.25 (0.43)      | 8.36 (0.59)      | 7.30 (0.51)   |
| 4.      | Energy charges    | 20.00 (1.39)      | 22.00 (1.53)     | 23.14 (1.62)     | 21.71 (1.51)     | 15.00 (1.04)     | 15.12 (1.06)     | 15.06 (1.05)   |
| 5.      | Repairs and       | 7.20 (0.50)       | 6.60 (0.46)      | 6.30 (0.44)      | 6.70 (0.47)      | 18.30 (1.27)     | 14.00 (0.99)     | 16.13 (1.13)   |
| 6.      | Recurring         | 20.80 (1.45)      | 20.84 (1.45)     | 20.86 (1.46)     | 20.83 (1.45)     | 23.06 (1.60)     | 22.54 (1.59)     | 22.80 (1.59) |
| 7.      | Packing material  | 23.18 (1.61)      | 23.20 (1.62)     | 23.22 (1.63)     | 23.20 (1.62)     | 23.98 (1.67)     | 24.02 (1.69)     | 24.00 (1.68)   |
| 8.      | Interest on       | 154.15 (10.71)    | 153.86 (10.71)   | 152.88 (10.71)   | 153.63 (10.71)   | 154.03 (10.71)   | 152.19 (10.71)   | 153.11 (10.71) |
| 9.      | Total variable    | 1438.73 (100.00)  | 1436.04 (100.00) | 1426.85 (100.00) | 1433.86 (100.00) | 1437.62 (100.00) | 1420.48 (100.00) | 1429.04 (100.00) |

(Figures in parentheses indicate percentage to total cost)

5. Total cost of rice flakes mills and puffed rice mills

Rice flakes mills

It is evident from the Table 5 that per quintal total cost was Rs 1464.42 in overall size group of flakes rice mills. In small flakes rice mills per quintal total cost was Rs 1464.44 and fixed cost and variable cost was Rs 25.71 and Rs. 1438.73 per quintal, respectively which accounted 1.76 and 98.24 per cent of the total cost per quintal. In medium rice flakes mills, per quintal total cost was Rs. 1476.88.

Puffed rice mills

In small puffed rice mills, the fixed cost was Rs.45.63 and variable cost was Rs. 24.32, 6.32 and 9.39 kg from one quintal of paddy.

Table 5: Total cost of flakes rice mills and puffed rice mills (Rs. /q)

| Sr. No. | Particulars       | Flakes Rice mills | Puffed rice mills |
|---------|-------------------|-------------------|------------------|
|         |                   | Small             | Medium           | Large            | Overall          | Small             | Medium           | Large            | Overall          |
| 1.      | Fixed cost        | 25.71 (1.76)      | 31.84 (2.17)     | 33.81 (2.33)     | 30.56 (2.09)     | 45.63 (3.08)     | 37.98 (2.60)     | 41.30 (2.81)   |
| 2.      | Variable cost     | 1438.73 (98.24)   | 1436.04 (97.83)  | 1426.85 (97.69)  | 1433.86 (97.91)  | 1437.62 (98.92)  | 1420.48 (97.40)  | 1429.04 (97.19) |
| 3.      | Total cost        | 1464.44 (100.00)  | 1467.88 (100.00) | 1460.66 (100.00) | 1464.42 (100.00) | 1483.25 (100.00) | 1458.46 (100.00) | 1470.34 (100.00) |

(Figures in parentheses indicate percentage to total cost)

6. Marketing cost of Rice flakes mills and Puffed rice mills

In overall size rice flakes mills per quintal marketing cost of rice flakes was Rs 100.29. In small rice flakes mills, the per quintal marketing cost was Rs 98.82. In medium rice flakes mills per quintal marketing cost was Rs. 105.13 and in large rice flakes mills, the per quintal marketing cost was Rs. 96.88.

7. Economics of flakes rice

It is revealed from Table 7 that in overall size group, the quantity of the processed rice flakes obtained was 59.97 quintals. The other products viz; husk, bran and broken flakes rice were 24.32, 6.32 and 9.39 kg from one quintal of paddy. The highest gross return (Rs 2340.45) was in large size rice.
flakes mills. The net profit was more in large mills (Rs 782.91) followed by medium (Rs. 743.94) and small (Rs 620.02). The benefit cost ratio was the highest in large flakes rice mills (1.50) followed by medium (1.47) and small (1.40). In overall size rice flakes mills group the B: C ratio was 1.46. It is observed from Table 7 that the quantity of puffed rice obtained was 60.79 kg and by products viz; husk, bran and broken puffed rice was 24.75, 5.60 and 8.86 kg, respectively in overall size group. The gross returns of puffed rice was Rs. 2116.18 in overall size group of puffed rice mills. The net profit was Rs. 505.97 and Rs. 575.86 in small and large size puffed rice mills, respectively. The benefit cost ratio was the highest (1.37) in large size puffed rice mills followed by small size puffed rice mills (1.32). Studied the economics of paddy processing and reveled that per quintal net returns from processing of purchased paddy has been found directly related to the size of rice mill. Also found that the benefit-cost ratio was 1.55, 1.52, and 1.55 for small, medium and large rice mill, respectively. In overall size group of puffed rice mills, the benefit cost ratio was 1.34.

| Sl. No. | Particulars | Flakes Rice | Puffed rice |
|--------|-------------|-------------|-------------|
|        |             | Small | Medium | Large | Overall | Small | Medium | Large | Overall |
| 1a. | Processed products (kg) | 58.97 | 60.25 | 60.05 | 59.97 | 60.40 | 61.11 | 60.79 |
| 2. | By products | | | | | | | |
| 2a. | Husk | 24.87 | 24.04 | 24.40 | 24.32 | 24.98 | 24.56 | 24.75 |
| 2b. | Bran | 5.87 | 6.48 | 6.31 | 6.32 | 5.53 | 5.67 | 5.60 |
| 2c. | Broken rice flakes | 10.29 | 9.23 | 9.24 | 9.39 | 9.09 | 8.66 | 8.86 |
| 3. | Value in (`) | 1887.04 | 2030.42 | 2053.71 | 1997.00 | 1812.00 | 1863.85 | 1838.90 |
| 4. | Gross returns (`) | 2183.28 | 2316.95 | 2340.45 | 2286.83 | 2092.19 | 2138.61 | 2116.11 |
| 5. | Net returns (C - D) (`) | 620.02 | 743.94 | 782.91 | 722.12 | 505.97 | 575.86 | 542.16 |
| 6. | Benefit cost ratio | 1.40 | 1.47 | 1.50 | 1.46 | 1.32 | 1.37 | 1.34 |

FC = Fixed cost, VC = Variable cost, MC = Marketing cost

| Sl. No. | Particulars | Flakes Rice | Puffed rice |
|--------|-------------|-------------|-------------|
|        |             | Small | Medium | Large | Overall | Small | Medium | Large | Overall |
| 1. | Gross returns | 3200 | 3370 | 3420 | 3330 | 3000 | 3050 | 3025 |
| 2. | Cost of processing | 1172.95 | 1340.99 | 1300.65 | 1324.10 | 1345.55 | 1377.66 | 1341.13 |
| 3. | Cost of raw material | 1183.48 | 1176.36 | 1165.10 | 1178.31 | 1185.00 | 1170.50 | 1177.75 |
| 4. | Value added | 1688.57 | 1852.65 | 1954.28 | 1817.57 | 1469.45 | 1541.74 | 1506.12 |
| 5. | Per cent increase over the raw material | 268.12 | 272.02 | 274.65 | 271.57 | 253.16 | 256.30 | 254.72 |

It is observed that value added in processing of paddy for flakes rice was the highest in large size (Rs 1954.25) followed by medium (Rs. 1852.65) and small size flakes rice mills (Rs.1688.57). The percentage increase in value added products over the raw material was the highest in large mills (274.65) followed by medium (272.02) and small (268.12) flakes rice mills. In puffed rice mills, the cost of raw material was more in small size puffed rice mills (Rs 1185.00) and lowest in large size puffed rice mills (Rs. 1170.50) whereas in overall the cost of raw material was Rs.1177.75. Processing cost was more in small (Rs. 345.55) followed by large (Rs. 337.76) size puffed rice mills. Shweta et.al (2011) reveled in the their study that total processing cost per quintal of paddy amounted to Rs. 127 per quintal for conventional and Rs.196.40 for modern units to process paddy and Rs. 35.30 for conventional and Rs. 41 for modern unit to process paddy in to poha. Sahu L.K. and Ayub M.A. (2017) reported that the total value added cost of paddy in rice flakes was involved to be Rs. 254 per q. during the processing of flakes rice; the major cost was registered in bagging of flakes rice and found to be 39.37 per cent. The gross return was Rs. 3000 and Rs 3050 in small and large puffed rice mills, respectively. It was inferred from the table that the percentage increase in value addition over the raw material was more in large size 256.30 than small 253.16 puffed rice mills. In overall the per cent increase over the raw material was 254.72 per cent.

9. Break-even analysis for flakes rice and puffed rice mills
Table 9: Break-even analyses for flakes rice and puffed rice mills

| Sl. No. | Size group | Total annual fixed cost (Rs./q) | Selling Price (Rs./q) | Variable cost (Rs./q) | Break-even quantity (q) |
|---------|------------|--------------------------------|----------------------|----------------------|------------------------|
|         | Rice flakes mills |                                 |                      |                      |                        |
|         | A.          |                                 |                      |                      |                        |
| 1.      | Small       | 44213.85                        | 3200                 | 1438.73              | 25.10                  |
| 2.      | Medium      | 56812.60                        | 3370                 | 1436.04              | 29.38                  |
| 3.      | Large       | 62751.58                        | 3420                 | 1426.85              | 31.48                  |
| 4.      | Overall     | 54594.34                        | 3330                 | 1433.86              | 29.79                  |
|         | B.          |                                 |                      |                      |                        |
| 1.      | Small       | 27286.62                        | 3000                 | 1437.62              | 17.46                  |
| 2.      | Large       | 29702.03                        | 3050                 | 1420.48              | 18.22                  |
| 3.      | Overall     | 28494.31                        | 3025                 | 1429.04              | 17.85                  |

It is revealed from the Table 9 that the break-even quantity in flakes rice was the highest in large size rice flakes mills (31.48 q) followed by medium (29.38 q) and small size flakes rice mills (25.10 q). In overall break-even quantity was 29.79 quintals. The total annual fixed cost was Rs. 44213.85, Rs. 56812.60 and Rs. 62571.58 in small, medium and large size rice flakes mills, respectively. While in overall size groups the annual fixed cost was Rs. 54594.34.

It is observed from the Table 9 that the break-even quantity in processing of puffed rice was more in large size puffed mills (18.22 q) followed by small (17.46 q), while in overall break-even quantity was 17.85 quintals. The variable cost was more in small size puffed rice mills (Rs. 1437.62) followed by large size puffed rice mills (Rs. 1420.48). It is observed that the break-even quantity in all the size of the unit was found to be at increasing rate as the size of unit increased.

Conclusions

It was concluded that is the net returns per quintal from processing of paddy was the highest in flakes rice mills (Rs. 722.12) followed by puffed rice mills (Rs.542.16). Benefit cost ratio was the highest in flakes rice mills (1.46) followed by puffed rice mills (1.34).Value addition per quintal of paddy was the highest in rice flakes (Rs. 1817.59) followed by puffed rice (Rs. 1506.12). Break-even quantities increases with increase in the size of mills.

References

1. Anonymous. Status paper on rice in Maharashtra, 2011. http://www.rkmp.co.in
2. Bagde NT, Shende NV, Ingle RK, Shende PV. Value addition and processing of paddy in the vicinity of Chandrapur district of Maharashtra. Indian J. of Agril. Mktg. 2002; 16(3):50-51.
3. Goel RC, Gangwar AC. Economic analysis of paraboiled Vs. raw rice processing. Financing Agriculture. 1980; 11(3&4):75-78.
4. Goel RC, Gangwar AC. An economic analysis of paddy processing in Haryana. Agricultural Situation in India. 1984; 38:195-197.
5. Goutam DS, Singh PN, Nahatkar SB. Cost: benefit analysis of paddy processing plants in the rice bowl of India. Agril. Mktg. 1988; 31(3):24-26.
6. Jindal VK, Saini SS. Method of husking and milling rice and their economics in Kangra hills. Agriculture and Agro -Industries J. 1972; 5(9):32.S
7. Rai A, Singh R. Comparative economics and capacity utilization of various techniques of paddy processing in Nainital district of Uttar Pradesh. Indian J Agril. Econ. 1989; 44(3):337-338.
8. Rajagopal. Foodgrains processing technology in changing perspective. Agril. Situation in India. 1988; 43:587-590.
9. Sahu LK, Ayub MA. An economic analysis of value addition of paddy into flakes rice in Balodabazar-Bhatapara district of Chandigarh. Indian Journal of Economics and Development. 2017; 13(2A):540-542.
10. Singh K, Rangi PS. Economic of paddy processing in Punjab. J Agril. Dev. and Policy. 1997; 8(1):88-93.