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## Socio-economic impact of coriander variety RKD-18 in humid south eastern plain zone of Rajasthan

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#### ABSTRACT

The present study was conducted to assess the socio-economic impact of coriander variety RKD-18 among coriander growers in the Humid South Eastern Plain Zone of Rajasthan. A total of 120 respondents comprising 60 adopters and 60 non-adopters were selected from Kota and Jhalawar districts. The impact was assessed in terms of social, economic, household welfare and technological dimensions using the Z-test. The findings revealed that significant differences were in social ( $Z = 4.53^{**}$ ), economic ( $Z = 3.74^{**}$ ) and technological ( $Z = 5.54^{**}$ ) impacts, while household welfare impact was non-significant ( $Z = 1.75_{NS}$ ). Overall, RKD-18 had a substantial positive impact on the technological, social and economic dimensions of coriander growers.

**Keywords:** Coriander, RKD-18, social impact, economic impact, household welfare impact, technological impact

#### introduction

Coriander (*Coriandrum sativum* L.) is an important seed spice crop of Rajasthan and contributes significantly to the agricultural economy of the Humid South Eastern Plain Zone. Pratap Raj Dhania-1 (RKD-18) is an improved coriander variety developed for the agro-climatic conditions of Rajasthan, with desirable characteristics such as good seed yield, comparatively early maturity and tolerance to important pests and diseases. The cultivation of improved varieties can influence farmers' socio-economic conditions through changes in productivity, income, technology use, social status and household welfare. However, systematic information on the socio-economic impact of RKD-18 under farmers' field conditions in the region was limited. Therefore, the present study was undertaken to assess the socio-economic impact of coriander variety RKD-18 in terms of social, economic, household welfare and technological dimensions among coriander growers of Kota and Jhalawar districts of Rajasthan.

#### Research methodology

The study was conducted in the Humid South Eastern Plain Zone of Rajasthan. Kota and Jhalawar districts were selected based on their higher coriander production in the zone. From Kota district, Ramganj Mandi and Chechat tehsils, and from Jhalawar district, Khanpur and Jhalrapatan tehsils were selected based on higher coriander production in their respective districts. Three coriander-producing villages from each selected tehsil were randomly selected for the study. A total of 120 coriander growers were selected as respondents, comprising 60 adopters and 60 non-adopters of coriander variety RKD-18. Primary data were collected through a structured interview schedule.

The socio-economic impact of coriander variety RKD-18 was assessed under four major dimensions, namely social, economic, household welfare and technological impact.

#### Result and discussion

##### *Socio-economic impact of coriander variety RKD-18 among growers*

Coriander variety RKD-18 has the potential to bring about desirable changes in the socio-economic conditions of coriander growers. Therefore, an attempt was made to assess the socio-economic impact of coriander variety RKD-18 among adopters and non-adopters. The impact was assessed under four major dimensions, namely social impact, economic impact, household welfare impact and technological impact. The differences between adopters and non-adopters were statistically examined using the calculated Z-values at the appropriate levels of significance. An attempt was also made to assess the overall socio-economic impact of coriander variety RKD-18 among the selected coriander growers.

**Social impact of coriander variety RKD-18**

The data presented in Table 1 revealed that the adoption of improved coriander variety RKD-18 had a significant positive impact on the social dimensions of the respondents. The calculated Z values for different social impacts ranged from 1.99 to 4.96 indicated significant differences between adopter and non-adopter respondents. The highest Z-value was observed for fellow farmers frequently visiting the farm to observe improved coriander production practices and seek technical guidance ( $Z = 4.96$ ), indicating a high significant difference at the 1% level. This was followed by considered as a resource person and opinion leader for improved coriander cultivation ( $Z = 3.75$ ); social status in the village improved ( $Z = 3.54$ ); sharing information about RKD-18 variety with other farmers ( $Z = 3.50$ ); participation in farmers meetings, agricultural fair, exhibitions, workshops, training programme and demonstrations ( $Z = 3.45$ ) and respect and recognition

increased among fellow farmers ( $Z = 3.02$ ) respectively and were showed significant differences between adopter and non-adopter respondents at 1 per cent level of significance.

Further, expanded social contacts and professional networks ( $Z = 2.38$ ) and co-operation and social cohesion among farmers increased ( $Z = 1.99$ ) showed significant differences between adopter and non-adopter respondents at 5 per cent level of significance.

The findings indicated that adoption of RKD-18 brought about a significant positive change in the social aspects of coriander growers. Significant differences between adopters and non-adopters were observed in respect and recognition among fellow farmers, information sharing, leadership and resource-person status, social cohesion, social status, participation in agricultural activities, and expansion of social and professional contacts. Interaction with fellow farmers also increased, as reflected by their visits to farms for observing improved coriander cultivation practices and seeking technical guidance.

**Table 1.** Social impact of coriander variety RKD-18 among coriander growers.

| Sr. No. | Social impact                                                                                                                      | Adopter<br>(n = 60) |      | Non-Adopter<br>(n = 60) |      | Z Value |
|---------|------------------------------------------------------------------------------------------------------------------------------------|---------------------|------|-------------------------|------|---------|
|         |                                                                                                                                    | Mean                | SD   | Mean                    | SD   |         |
| 1.      | Respect and recognition increased among fellow farmers                                                                             | 1.71                | 0.45 | 1.35                    | 0.77 | 3.02**  |
| 2.      | Share information about RKD-18 variety with other farmers                                                                          | 1.76                | 0.42 | 1.33                    | 0.83 | 3.50**  |
| 3.      | Consider as a resource person and opinion leader for improved coriander cultivation                                                | 1.80                | 0.40 | 1.38                    | 0.78 | 3.75**  |
| 4.      | Cooperation and social cohesion among farmers increased                                                                            | 1.73                | 0.48 | 1.51                    | 0.72 | 1.99*   |
| 5.      | Social status in the village improved.                                                                                             | 1.83                | 0.37 | 1.43                    | 0.72 | 3.54**  |
| 6.      | Participation has increased in farmer meetings, agricultural fairs, exhibitions, workshops, training programmes and demonstrations | 1.73                | 0.44 | 1.31                    | 0.77 | 3.45**  |
| 7.      | Expanded social contacts and professional networks                                                                                 | 1.71                | 0.55 | 1.40                    | 0.74 | 2.38*   |
| 8.      | Fellow farmers frequently visit farm to observe improved coriander production practices and seek technical guidance                | 1.85                | 0.36 | 1.30                    | 0.76 | 4.96**  |

\*\*=Significant at 1% level of significance \* = Significant at 5% level of significance

**Economic impact of coriander variety RKD-18**

The data presented in Table 2 revealed that the adoption of improved coriander variety RKD-18 had a significant positive impact on the economic dimensions of the respondents. The calculated Z values for different economic impacts ranged from 2.00 to 3.87 indicated significant differences between adopter and non-adopter respondents. The highest Z-value was observed for annual and net income of farm has increased ( $Z = 3.87$ ), indicating a high significant difference at the 1% level. This was followed by adoption of improved crop varieties has increased crop yield ( $Z = 3.46$ ) respectively and were showed significant differences between adopter and non-adopter respondents at 1 per cent level of significance.

Further, price realization for coriander has improved ( $Z = 2.40$ ); contributed to household saving and improved financial security ( $Z = 2.34$ ) and provide higher marketable surplus ( $Z = 2.00$ ) showed significant differences between adopter and non-adopter respondents at 5 per cent level of significance. Whereas, awareness of market demand has increased ( $Z = 1.07$ ); access better market for coriander products ( $Z = 0.33$ ); and cost of production has reduced ( $Z = 0.32$ ) showed non-significant differences between adopter and non-adopter respondents. Overall, the findings indicated that the economic impact of coriander variety RKD-18 was significant in terms of income, savings and financial security, crop yield, marketable surplus and price realization, whereas cost of production, market access and awareness of market demand showed non-significant differences between adopters and non-adopters.

**Table 2.** Economic impact of coriander variety RKD-18 among coriander growers.

| Sr. No. | Economic impact                                                  | Adopter<br>(n = 60) |      | Non-Adopter<br>(n = 60) |      | Z Value            |
|---------|------------------------------------------------------------------|---------------------|------|-------------------------|------|--------------------|
|         |                                                                  | Mean                | SD   | Mean                    | SD   |                    |
| 1.      | Annual and net income of farm has increased                      | 1.86                | 0.34 | 1.40                    | 0.82 | 3.87**             |
| 2.      | Contributed to household saving and improved financial security. | 1.70                | 0.59 | 1.43                    | 0.67 | 2.34*              |
| 3.      | Adoption of improved crop varieties has increased crop yield.    | 1.80                | 0.40 | 1.38                    | 0.84 | 3.46**             |
| 4.      | Cost of production has reduced                                   | 1.73                | 0.48 | 1.76                    | 0.53 | 0.32 <sub>NS</sub> |
| 5.      | Provide higher marketable surplus                                | 1.68                | 0.59 | 1.41                    | 0.84 | 2.00*              |
| 6.      | Access better market for coriander products                      | 1.75                | 0.57 | 1.78                    | 0.41 | 0.33 <sub>NS</sub> |
| 7.      | Price realization for coriander has improved                     | 1.71                | 0.45 | 1.40                    | 0.86 | 2.40*              |
| 8.      | Awareness of market demand has increased                         | 1.73                | 0.54 | 1.63                    | 0.48 | 1.07 <sub>NS</sub> |

\*\*= Significant at 1% level of significance \*= Significant at 5% level of significance

NS = Non-significant

### **Household welfare impact of coriander variety RKD-18**

The household welfare impact of coriander variety RKD-18 presented in Table 3. The calculated Z-value for the living standard of family members was 2.93, indicating a significant difference between adopters and non-adopters at the 5 per cent level of significance. Whereas, food security and family nutrition ( $Z = 0.53$ ); ownership of new household items or farm assets ( $Z = 0.33$ ) and expenditure on education and educational opportunities for children ( $Z = 0.31$ ) were found non-significant difference between adopters and non-adopters.

education and educational opportunities for children ( $Z = 0.31$ ) were found non-significant difference between adopters and non-adopters. Thus, the findings indicated that a significant difference was observed only in the living standard of family members, while the other household welfare indicators like; food security and family nutrition, ownership of new household items or farm assets and expenditure on education and educational opportunities for children showed non-significant difference between adopters and non-adopters.

**Table 3.** Household welfare impact of coriander variety RKD-18

| Sr. No. | Household Welfare impact                                                                               | Adopter<br>(n = 60) |      | Non-Adopter<br>(n = 60) |      | Z Value            |
|---------|--------------------------------------------------------------------------------------------------------|---------------------|------|-------------------------|------|--------------------|
|         |                                                                                                        | Mean                | SD   | Mean                    | SD   |                    |
| 1.      | Food security and nutrition of family have increased                                                   | 1.71                | 0.45 | 1.66                    | 0.57 | 0.53 <sub>NS</sub> |
| 2.      | Living standard of family members has increased                                                        | 1.78                | 0.41 | 1.45                    | 0.81 | 2.93*              |
| 3.      | Ownership of new household items or farm assets have increased                                         | 1.73                | 0.44 | 1.76                    | 0.56 | 0.33 <sub>NS</sub> |
| 4.      | Expenditure on education and educational opportunities of better education for children have increased | 1.68                | 0.46 | 1.65                    | 0.60 | 0.31 <sub>NS</sub> |

\*= Significant at 5% level of significance NS = Non-significant

(continued on next page)

**Technological impact of coriander variety RKD-18**

The data presented in Table 4 indicate that significant differences existed between adopters and non-adopters with respect to better adaptability, crop productivity, quality of coriander, technical knowledge,

crop management skills, pest and disease management, and efficient use of plant protection chemicals, whereas the differences in early maturity, cropping intensity and stable yield under variable environmental conditions were found to be non-significant.

**Table 4.** Technological impact of coriander variety RKD-18 among coriander growers.

| S. No. | Technological impact                                                                 | Adopter<br>(n = 60) |      | Non-Adopter<br>(n = 60) |      | Z Value            |
|--------|--------------------------------------------------------------------------------------|---------------------|------|-------------------------|------|--------------------|
|        |                                                                                      | Mean                | SD   | Mean                    | SD   |                    |
| 1.     | Early maturity of the crop.                                                          | 1.85                | 0.36 | 1.76                    | 0.42 | 1.26 <sub>NS</sub> |
| 2.     | Better adaptability (Better Performance under specific climate & soil conditions)    | 1.78                | 0.41 | 1.35                    | 0.73 | 3.98 <sup>**</sup> |
| 3.     | Cropping intensity has increased after adoption                                      | 1.75                | 0.43 | 1.65                    | 0.63 | 1.02 <sub>NS</sub> |
| 4.     | Stable yield under variable environmental conditions, reducing the risk.             | 1.73                | 0.44 | 1.63                    | 0.48 | 1.19 <sub>NS</sub> |
| 5.     | Crop productivity has increased                                                      | 1.81                | 0.43 | 1.20                    | 0.68 | 5.87 <sup>**</sup> |
| 6.     | Quality of coriander in terms of size, appearance, aroma and shelf life has improved | 1.76                | 0.42 | 1.38                    | 0.86 | 3.08 <sup>**</sup> |
| 7.     | Enhanced the technical knowledge in farming                                          | 1.80                | 0.40 | 1.45                    | 0.79 | 3.06 <sup>**</sup> |
| 8.     | Improved in crop management skills                                                   | 1.83                | 0.37 | 1.28                    | 0.82 | 4.74 <sup>**</sup> |
| 9.     | Pest and disease management has improved                                             | 1.71                | 0.45 | 1.40                    | 0.86 | 2.47 <sup>*</sup>  |
| 10.    | More efficient use of plant protection chemicals                                     | 1.78                | 0.41 | 1.36                    | 0.86 | 3.41 <sup>**</sup> |

\*\*= Significant at 1% level of significance \*= Significant at 5% level of significance

NS = Non-significant

The calculated Z values for different technological impacts ranged from 2.47 to 5.87 indicated significant differences between adopter and non-adopter respondents. The highest Z-value was observed for crop productivity has increased ( $Z = 5.87$ ), indicating a high significant difference at the 1% level. This was followed by improved in crop management skills ( $Z = 4.74$ ); more efficient use of plant protection chemicals ( $Z = 3.41$ ); better adaptability - better Performance under specific climate and soil conditions ( $Z = 3.98$ ); quality of coriander in terms of size, appearance, aroma and shelf life has improved ( $Z = 3.08$ ); and enhanced the technical knowledge in farming ( $Z = 3.06$ ), respectively and showed significant differences between adopter and non-adopter respondents at 1 per cent level of significance. Pest and disease management has improved ( $Z = 2.47$ ) showed significant differences between adopter and non-adopter respondents at 5 per cent level of significance.

Whereas, cropping intensity has increased after adoption ( $Z = 1.02$ ); stable yield under variable environmental conditions ( $Z = 1.19$ ); and early maturity of the crop ( $Z = 1.26$ ) were found non-significant dif-

ferences between adopter and non-adopter farmers of coriander variety RKD-18.

**Overall socio-economic impact of coriander variety RKD-18**

The data presented in Table 5 revealed that the adoption of improved coriander variety RKD-18 had overall significant positive impact on the social, economic and technological dimensions of the respondents. The highest Z-value was observed for technological impact ( $Z = 5.54$ ), indicating a high significant difference at the 1% level. This was followed by social impact ( $Z = 4.53$ ) and economic impact ( $Z = 3.74$ ), respectively and showed significant differences between adopter and non-adopter respondents at 1 per cent level of significance.

Whereas, household welfare impact recorded a Z-value of 1.75, indicating a non-significant difference between adopters and non-adopter farmers of coriander variety RKD-18. Overall, these findings indicated that coriander variety RKD-18 had a significant impact on the social, economic and technological aspects of coriander growers. However, the difference in household welfare impact between

adopters and non-adopters was not statistically significant. Thus, the overall results showed that coriander variety RKD-18 contributed

more prominently towards technological, social and economic improvement among the growers.

**Table 5.** Overall Socio-economic impact of coriander variety RKD-18

| S. No. | Social-economic impact   | Adopter<br>(n = 60) |      | Non-Adopter<br>(n = 60) |      | Z Value            |
|--------|--------------------------|---------------------|------|-------------------------|------|--------------------|
|        |                          | Mean                | SD   | Mean                    | SD   |                    |
| 1.     | Social Impact            | 14.15               | 1.52 | 11.03                   | 5.11 | 4.53 **            |
| 2.     | Economic Impact          | 14.01               | 2.06 | 12.21                   | 3.10 | 3.74 **            |
| 3.     | Household welfare Impact | 6.91                | 0.84 | 6.53                    | 1.52 | 1.75 <sub>NS</sub> |
| 4.     | Technological Impact     | 17.83               | 1.47 | 14.48                   | 4.45 | 5.54 **            |

\*= Significant at 5% level of significance \*\*= Significant at 1% level of significance

NS = Non-significant

These findings are in line with the findings reported by Sahana *et al.* (2017) [1], Shyam *et al.* (2020) [2], Nderim Rudi (2008) [3], Wu *et al.* (2010) [4], Meena *et al.* (2019) [5], Manda *et al.* (2018) [6], Mehta (2020) [7], Srinivas and Nedunchezhiyan (2020), Prakash *et al.* (2023) [8] and Tandane *et al.* (2026) [9], who reported positive changes in the social, economic, household welfare and technological aspects of farmers associated with improved agricultural practices and crop production.

## Conclusion

The study concluded that adoption of coriander variety RKD-18 resulted in significant improvements in the social, economic and technological dimensions of coriander growers. The technological dimension showed the most prominent impact, followed by social and economic dimensions, whereas the overall household welfare impact was found to be non-significant. Thus, RKD-18 can contribute to improving the socio-economic conditions of coriander growers, particularly through technological advancement, improved productivity and enhanced social and economic outcomes.

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