An Assessment of Improved Production Technology of Rapeseed Mustard under Rain-fed Agro-ecosystem in Hamirpur District of Himachal Pradesh, India

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DOI: http://dx.doi.org/10.33980/jbcc.2020.v06i01.004  
(Received 11 April, 2020; Accepted 20 May, 2020; Published 26 June, 2020)

ABSTRACT: An assessment of improved production technology of rapeseed mustard was conducted in Hamirpur district of Himachal Pradesh during 2018-2019 through frontline demonstrations. Ninety farmers of 14 villages of Hamirpur district in Himachal Pradesh were provided seeds of rapeseed mustard (Gobhi Sarson GSC-7) during November, 2018. The crop was harvested in February-March, 2019. One Kg seeds yielded 250 Kg mustard seeds with a benefit to cost ratio of 1.75. This technology has proved great boost to enhancement of agricultural income and sustainability of farming under rain-fed agro-ecosystem.

Keywords: Rapeseed Mustard; Rain-fed; Gobhi Sarson; Production Technology and Agro-ecosystem.

INTRODUCTION: Hamirpur district is under rain-fed agro-ecosystem and is a part of sub-montane sub-tropical low hill agro-climatic zone of Himachal Pradesh. Wheat, maize, paddy, gram, sugarcane, mustard, potato and vegetables are the major field crops grown in this zone.\(^1\) Agriculture farm income accounts for 20% in this rain fed region. Using improved crop varieties is important for doubling the income of the farmers by 2022. A number of research activities has been undertaken to document the ecosystem of lower foot hills of Himachal Pradesh including district Hamirpur.\(^2\)\(^-\)\(^25\)

MATERIALS AND METHODS: Career Point University Hamirpur conducted frontline demonstration of improved production technology of rapeseed mustard in the district. Ninety farmers of 14 villages (namely Tikker, Bhair, Ser, Balbagh, Bindli, Cherchedi, Tooh, Mehal, Dhanwin, Lathwan, Dungr, Anu Kalan, Barot and Kot) of Hamirpur district (Himachal Pradesh) were provided seeds of rapeseed mustard (Gobhi Sarson GSC-7) during November, 2018 (Figure 1 and Figure 2).

Figure 1: Rapeseed-Mustard crop in farmers field.

Figure 2: Field photograph of crop
RESULTS AND DISCUSSION: Rapeseed-mustard is the third important oilseed crop in the world after soybean (*Glycine max*) and palm (*Elaeis guineensis* Jacq.) oil. The mustard growing areas in India are experiencing the vast diversity in the agro climatic conditions and different species of rapeseed-mustard are grown in some the country. Gobhi sarson (*Brassica napus*) and karan rai (*Brassica carinata*) are the new emerging oilseed crops having limited area of cultivation. Gobhi sarson is a long duration crop (more than 155 days) confined to Punjab, Himachal Pradesh and Haryana. Despite the high quality of oil and meal and also its wide adaptability for varied agro-climatic conditions, the area, production and yield of rapeseed-mustard in India have been fluctuating due to various biotic and abiotic stresses coupled with India's domestic price support programme. Nevertheless, the crop has potential to ensure the nutritional security and contribute to livelihood security. The highest productivity is in Gujarat (1396 kg/ha), Haryana (1343 kg/ha) and Rajasthan (1185 kg/ha) with overall national yield of 1151 kg/ha. However the average yield in the study area is 747 Kg/ha which is below the national yield (Table 1).

<table>
<thead>
<tr>
<th>SN</th>
<th>Names of farmer</th>
<th>Mean yield (kg/ha)</th>
<th>YIOF P (%)</th>
<th>COC (Rs/ha)</th>
<th>GMR (Rs/ha)</th>
<th>ANMR (Rs/ha)</th>
<th>B: C Ratio</th>
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<td>650</td>
<td>525</td>
<td>24</td>
<td>12000</td>
<td>12200</td>
<td>21750</td>
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<td>Neeta Devi Mansa Devi Dharm Chand Piplan Devi Guldai Devi Hukum Chand Omkar Chand Suresh Kumar Amit Kumar Avinash Sharma</td>
<td>700</td>
<td>525</td>
<td>33</td>
<td>12000</td>
<td>12200</td>
<td>21060</td>
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<tr>
<td>3</td>
<td>Veena Devi Sanjeev Kumar Kamla Devi Anjali Manish Manmati Devi Prem Lata Gyan Chand Neeraj Suman Devi</td>
<td>675</td>
<td>525</td>
<td>29</td>
<td>12000</td>
<td>12200</td>
<td>21550</td>
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</table>
|  | Kuldeep Chand  
Sunita Devi  
Rekha Sharma  
Shantam Bhardwaj  
Neelam  
Pusha Devi  
Soma Devi  
Sunil Sharma  
Tripta Devi  
Neita Devi | 700 525 33 12000 12200 21060 16000 9060 1.7 1.3 |
|---|---|---|---|---|---|---|---|---|---|
| 4 | Sapna Devi  
Baldev Singh  
Reena Devi  
Hoshiyar Singh  
Pradeep Kumar  
Asha Devi  
Parkash Devi  
Sushma Sharma  
Bashant  
Ram Sharma | 675 525 29 12000 12200 21550 16000 9550 1.8 1.3 |
| 5 | Kiran Bala  
Piar Chand  
Rajesh Kumar  
Rakesh Kumar  
Ajudhya Devi  
Jaisi Ram  
Urmil Devo  
Babu Ram  
Roop Lal  
Taro Devi  
Chandu Lakha | 1300 1050 24 12000 12200 21750 16000 9750 1.8 1.3 |
| 6 | Santosh Kumari  
Vinod Kumar  
Ashok Kumar  
Milki Ram  
Dhani Ram  
Dalal Singh  
Ashok Kumar  
Kanshi Ram  
Santosh Kumari  
Rattan Chand | 700 525 33 12000 12200 21060 16000 9060 1.7 1.3 |
| 7 | S. Vaibhav  
Shashi Punam  
Hoshiyar  
Rajinder  
Tajinder,  
M. R Sharma  
Tripta Kumari  
Sunil  
Priyanka | 650 525 24 12000 12200 21750 16000 9750 1.8 1.3 |
| 8 | | | | | |
**CONCLUSION:** Under this collaboration 90 farmers of 14 villages (namely Tikker, Bhair, Ser, Balbagh, Bindli, Cherchedi, Tooh, Mehal, Dhanwin, Lathwan, Dungri, Anu Kalan, Barot and Kot) of Hamirpur district (Himachal Pradesh) were provided seeds of rape-seed mustard (Gobli Sarson GSC-7) during November, 2018. The crop was harvested in February-March, 2019. One Kg seeds yielded 250 Kg mustard seed with a benefit to cost ratio of 1.75. This technology has proved great boost to enhancement of agricultural income and sustainability of farming under rain-fed agro-ecosystem.

**ACKNOWLEDGEMENT:** The authors are thankful to the Directorate of Rapeseed Mustard Research, Bharatpur and Indian Council for Agricultural Research for providing necessary grants for frontline demonstrations. Thanks are also due to Punjab Agricultural University Ludhiana for providing seeds for distribution to farmers.

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