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RESEARCH PAPER

Restraints in tomato seed production in Haveri district

B. H. LIKHITH*, S. H. GOTYAL AND S. G. ASKI

Department of Agricultural Extension Education,College of Agriculture, Dharwad
University of Agricultural Sciences, Dharwad - 580 005, India
*E-mail: likhithbhgowda1999@gmail.com

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Abstract: The present study examines the difficulties faced by tomato seed growers having limited knowledge and partial adoption of seed production practices. The present study was conducted in Haveri district of Karnataka state during 2023-24. "*Ex-post facto*" research design was employed for the study. The required data was collected by using simple random sampling technique in Haveri district, constituting a total sample size of 120 farmers. Statistical tools such as frequency and percentage were used. All respondents expressed outbreak of pest and diseases followed by high cost of labour (88.33%), followed by non-availability of skilled labour on time (80.83%), delay in getting grow out test (GOT) reports (69.16%), effect of unseasonal rains during pollination (38.33%), non-availability of enough quantity of irrigation (19.17%) and lack of full knowledge about seed production skills (7.50%) were production-oriented constraints. In terms of market-oriented constraints, 26.67 per cent experienced deductions in seed quantity purchased by agencies, followed by deny of transport charges by procurement agency (14.17%) and rejection of seed produced in case of not meeting required seed quality parameters (12.50%). Growers suggested providing timely GOT reports (80.84%), farm mechanization (58.33%) and financial support for rain damage (40.83%) as key solutions.

Key words: Adoption, Restraints, Seed growers, Tomato

Introduction

Agriculture relies heavily on seed, which is a basic input for crop cultivation. The response of all other inputs depends largely on quality of seed to a larger extent. It is estimated that the direct contribution of quality seed alone to the total production is about 15 - 20 per cent depending upon the crop and it can be further raised up to 45.00 per cent with efficient management of other inputs (Jogendra *et. al*., 2019). Previously, farmers would save a portion of their produced seeds for use in the following growing season, but today, the process of producing seeds has evolved into an enterprise focused on supplying high-quality seed with distinctive characteristics. Such as dwarf varieties, pest and disease tolerant varieties, drought resistant varieties and related technologies.

In agriculture, vegetable crops play an important role in developing national economy along with and social sectors, helping to improve income and nutrition. Among vegetables, tomato is a widely cultivated and consumed vegetable crop with high economic and nutritional value worldwide. Tomato is the world's second most significant vegetable after potato. India is second only to China in terms of tomato acreage and production. India has a cultivated area of 8.40 lakh hectares with a production of 206.2 lakh tonnes. Karnataka is one of the major tomatoes producing state after Madhya Pradesh with a share of 12.60 per cent (Anon, 2023).

Tomato is also recognised as a "protective food" due to its unique nutritional content. Tomatoes are high in vitamin A and C, as well as other minerals, which are essential for a variety of dishes such as sambar, soup, juice, chutney, pickles and ketchup. Tomatoes contain a high concentration of antioxidants, including phenolics, carotenoids (particularly lycopene and beta-carotene), vitamin C (ascorbic acid) and trace levels of vitamin E.

Material and methods

The present study was conducted in Haveri district of Karnataka state. Considering the major tomato seed production area of Karnataka, the Haveri district was selected. Further two talukas in Haveri district were selected on the same basis. Further, from each selected taluka, two hoblies were selected, from each hobli, 30 tomato seed growers were randomly selected to constitute a total sample size of 120 respondents. The respondents were personally interviewed with pre tested interview schedule. The data were tabulated and analyzed by using statistical tools like frequency and percentage.

Results and discussion

Table 1. highlighted that all respondents expressed outbreak of pest and diseases. This is due to the outbreak of pests and diseases is a common challenge faced by growers due to the vulnerability of crops to various biotic stresses. This led to considerable reduction in yield and quality and severely impacting production. An earlier study on the constraints and suggestions of tomato growers also reported this as a major constraint (Rashmi *et al*., 2020). High labour costs (88.33%) are a significant constraint due to the increasing demand for wages, which raises production expenses, making it difficult for farmers to sustain profitability, especially in labour-intensive activities

Table 1. Restraints faced by tomato seed growers

Restraints	Frequency	Percentage
i. Production oriented		
Effect of unseasonal rains during pollination	46	38.33
Outbreak of pest and diseases	120	100.00
Non availability of skilled labour in time	97	80.83
Lack of complete knowledge about seed production skills	9	7.50
Non availability of enough quantity of irrigation	23	19.17
Delay in getting grow out test (GOT) test reports	83	69.16
High cost of labour	106	88.33
ii. Market oriented		
Rejection of seed produced in case of not meeting required seed quality parameters	15	12.50
Deduction in quantity of seeds purchased by agency	32	26.67
Procurement agency will not pay transportation cost	17	14.17

like pollination and seed extraction. Earlier research also identified this as a major constraint (Nagesh, 2005). The non-availability of skilled labour in time (80.83%) at critical times is another pressing issue. This finding is in conformity with earlier studies (Sharma, 2017, Jangwad *et al*., 2021 and Ghagare, 2018) that also reported this problem. Timely and skilled labour is essential for operations such as emasculation and harvesting. Delays in these processes can affect the quality and quantity of seeds.

About 69.16 per cent of growers expressed delayed grow-out test (GOT) reports as a constraint. This delay can lead to financial losses and diminished trust between seed producers and buyers. Unseasonal rains during pollination (38.33%) can damage flowers and interfere with successful seed setting. This unpredictable weather pattern reduces seed production efficiency, adding risk to the grower's efforts.

The lack of sufficient irrigation is another constraint faced by 19.17 per cent of growers. Earlier research also identified the lack of sufficient irrigation as a constraint (Nagesh, 2005). As water is critical for maintaining healthy plants during seed development. Water scarcity can lead to underdeveloped seeds, impacting overall productivity. Limited knowledge of seed production skills (7.50%) affects the precision and effectiveness of growing techniques. These results are in line with earlier research that also reported this constraint (Varsha, 2016). Without complete expertise in recommended methods, growers may face suboptimal yields and seed quality.

In terms of market constraints, deductions in seed quantity purchased (26.67%) by agencies create uncertainty for seed growers, reducing their income despite meeting production targets. Seed companies' refusal to pay transportation costs (14.17%) further burdens seed growers, increasing the cost of selling seeds and lowering profitability. Additionally, the rejection of seeds (12.50%) that do not meet quality parameters leads to wasted effort and financial loss for the growers.

Table 2. Suggestions elicited by tomato seed growers

Suggestions	Frequency	Percentage
Financial support in case of rain damage losses	49	40.83
Providing GOT report in time	97	80.84
Farm mechanization	70	58.33
Including the cost of seed transportation in the payment of receipt	18	15.00

The suggestions elicited by tomato seed growers (Table 2) revealed that majority (80.84%) emphasized the timely provision of Grow Out Test (GOT) reports, as delays hinder planning for future crops and reduce trust in the seed production process. Farm mechanization was suggested by 58.33 per cent of growers, reflecting the demand for tools and machinery that can reduce labor dependence and enhance production efficiency. About 40.83 per cent of respondents expressed the need for financial support in cases of crop loss due to unexpected rainfall, highlighting their vulnerability to weather-related risks and the importance of risk mitigation measures. Additionally, 15 per cent of the growers recommended including the cost of seed transportation in their payment settlements, suggesting a need to ease financial burdens and ensure fair compensation for their efforts.

Conclusion

To effectively address the persistent challenges of pest and disease outbreaks faced by tomato seed growers, corporate companies should take an active role in promoting Integrated Pest and Disease Management practices. These sustainable approaches help reduce dependence on chemical pesticides while maintaining crop health and productivity. Providing subsidies for shade nets can further protect plants by acting as a physical barrier against pests and by shielding crops from the increasing impacts of climate change, such as temperature extremes and erratic rainfall. Moreover, introducing small-scale agricultural machinery like tillers and digging tools can ease labor burdens, improve operational efficiency, and enhance the overall scalability of seed production. Establishing community-based seed extraction units can also play a key role in improving post-harvest processing and ensuring higher seed quality, benefiting growers through better market value and productivity. Timely provision of Grow Out Test (GOT) results allows for faster decision-making in future crop cycles, while prompt and transparent payments create trust and encourage ongoing grower participation. Together these interventions can build a more efficient, resilient and grower-friendly tomato seed production ecosystem.

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