International Journal of Agriculture and Animal Production
ISSN 2799-0907
Vol : 03 , No. 01 , Dec 2022-Jan 2023
http://journal.hmjournals.com/index.php/IJAAP
DOI: https://doi.org/10.55529/ijaap.31.24.31

An Exploration Study on Hybrid Vegetable Crops in Kulgam District of Jammu and Kashmir

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Received: 25 August 2022 **Accepted:** 10 November 2022 **Published:** 06 December 2022

Abstract: Seed is considered as the most fundamental and important ingredient for long-term agriculture. All other inputs respond to seed quality to a considerable amount, and quality seed alone contributes 20 percent to overall yield, depending on the crop and can be increased to 45 percent with efficient management of other inputs. The Present study is aimed to evaluate the effects of gender for cultivation of hybrid vegetable crops in Kulgam district of Jammu and Kashmir. Well structured questionnaire were designed as an instrument to collect primary data from the respondent, the questionnaire were distributed to 100 respondents on random basis, all the questionnaires were collected back during survey but at data entry stage it was found that 8 questionnaires were incomplete and hence eliminated from the present study, therefore the final sample size of present study is 92 farmer. Hence, the empirical results and findings are discussed in the present work.

Keywords: Gender of Farmers, Hybrid Vegetable, Total Land Holding, Age of Farmers.

1. INTRODUCTION

Seed is the most fundamental and important ingredient for long-term agriculture. As a result, our primary concern and emphasis is on producing high-quality seed that allows us to extract more and more from less and less. All other inputs respond to seed quality to a considerable amount, and it is believed that quality seed alone contributes 15–20 percent to overall yield, depending on the crop, and that this may be increased to 45 percent with efficient management of other inputs. In the previous three decades, the government has taken a number of innovative and reformative initiatives to help the country's seed industry flourish. Agriculture is the economic backbone of rural areas. India's agriculture has grown

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significantly, and we are on the verge of a second green revolution thanks to contemporary agricultural technologies. A good grade seed is the most fundamental and important ingredient for sustainable agriculture. In the world, Indian seed industry is one of the most developed and vibrant, currently ranking sixth with revenue of about 9000 crores. The Indian Seed Industry has grown at a CAGR of 12 percent over the last five years, compared to a global growth rate of 6-7 percent. Increased use of Bt cotton hybrids, single cross corn hybrids, and hybrid vegetables has resulted in significant value growth. Increased Seed replacement rate in crops like paddy and wheat has accounted for the majority of the volume increases. The Indian seed business is changing dramatically, with private seed companies playing a major role, international seed companies entering the market, Indian enterprises forming joint ventures with multinational seed companies, and consolidations. For the next four years, Indian seed industry is expected to develop at a CAGR of 17pecent (Singh Jogendra et al. 2019).

Indian seeds market

From 2011 to 2018, the Indian seed market was expected to be valued 4.1 billion dollars, with a compound annual growth rate of 15.7 percent. From 2019 to 2024, it is expected to grow at a CAGR of 13.6 percent, culminating in a market value of $9.1 billion. India's seed business is experiencing new ideal models of growth and improvement, thanks to rising local interest and demand for high-quality seeds in various far-flung nations, particularly in Southeast Asia. The seed's image in India has changed over time. Indian agriculture formerly relied on seeds left over from earlier harvests. The most radical seeds created by seed groups are already invading ranchers' crops. The wonder has established itself amid the ever-changing aspects of horticulture in India and throughout the world (Indiaeconomicstrategy.dfat.gov.au).

The Indian seed industry has grown rapidly and should continue to do so, allowing agriculture production to expand even further. The seed industry's role is to create a sufficient number of high-quality seeds while simultaneously achieving varietal variety. As Indian lifestyles and diets improve, companies that develop, manufacture, and market seeds will prosper. Farmers now have money in their hands and want to spend it on seeds that yield quicker, better harvests from the same kerchief-sized plots. With rising vegetable consumption, vegetable farmers and producers anticipate a brighter future. However, this increased output must be done with current or reduced land, water, labor, and other inputs, all while minimizing environmental impact. Among the few options for increasing vegetable production and productivity, the adoption of excellent quality seeds looks to be a realistic and easily adopted alternative for meeting future requirements. The number of players in the vegetable seed business is gradually increasing as they see a brighter future. The number of participants in the vegetable seed sector is progressively rising as they perceive a brighter future. Maintaining a consistent supply and distribution network of high-quality seeds is critical for achieving success in this competitive environment. With the aid of a distribution network analysis of hybrid vegetable seeds, a firm may determine its strengths and weaknesses, allowing it to capitalize on its strengths while overcoming its weaknesses

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India hybrids vegetable seeds market

Vegetable hybridization-driven increase was considerable in the previous decade. Hybrid vegetable output has increased from 88.62 million metric tons in 2001-02 to 178.17 million metric tons in 2016-17. Tomatoes, okra, and gourds, for example, accounted for a substantial percentage of the country's overall hybrid vegetable seed value in 2018, accounting for 9 percent, 15 percent, and 11 percent, respectively. In the same year, vegetable hybrid seeds were valued at USD 397.21 million. Furthermore, the Indian government is promoting the use of hybrid seeds in vegetable production by assuring the availability of high-quality seeds, bridging the knowledge gap among farmers about improved practices, and creating supportive infrastructure in the nation. As a result, government assistance in the form of different policies and product launches by industry participants are expected to boost market growth over the forecast period (Globenews wire.com).

Review of Literature

Cheema et al. (2004) the production of seasonal tomato crop under housing studies was started at Vegetable Research Farm, Punjab Agricultural University, Ludhiana (India). In the first year (2001-02), Avinash - 2 and Naveen breeds and varieties CLN 2026D were tested for total yield, adoption / other fruit seeds and insect infestations. Naveen performed very well in terms of fruit yield (2.87 kg / crop), commercial yield (2.77 kg / crop) compared to other inputs (1.76-2.08 kg / whole crop yield and 1.51-1.91 kg / crop fruit for sale). Fruit damage with Spodoptera litura only was found to be lower (3.00%) in Naveen compared to CLN 2026 D (9.64%). Also, Kumar et al. (2004) hybrid varieties play an important role in increasing vegetable production due to high yield strength, early ripening and high quality and resistance characteristics. Hybrid species have recently emerged in India and in many developed countries have been cultivated for many years' tomatoes, eggplant, peppers, cucumber, muskmelon, watermelon, cabbage, cauliflower, carrot, etc.

It is an important plant whose seedlings are not only found but also found by Indian farmers to some extent. Currently, Karnataka, Maharashtra, Gujarat, Andhra Pradesh, Uttar Pradesh and Madhya Pradesh are the major hybrid tomato producing areas. The total production of cabbage in the southern parts of Maharashtra and West Bengal is less than F1 seed while as Cebolla-Cornejo et al. (2007) a study was conducted in the 'Huerta de Valencia' area of 'Comunidad Valenciana' to examine the genetic variants of traditional tomato varieties, as an example of a process affecting vegetable crops in Europe. The urbanization of agricultural land, agricultural change, low farm profitability, the age of farmers, the transformation of vegetable gardens and other diseases and disease-related diseases have been identified as major factors affecting genetic erosion in this analysis similarly, Peña and Hughes (2007) the institute has made significant contributions to the development of Chinese tomato and cabbage varieties that tolerate heat and subsequent extraction of flexible, tropical varieties worldwide. The key to achieving high yields with heat-resistant plants is crossing genes into heat-tolerant genes and disease-resistant or winter-resistant species. Muhammad et al. (2021) temperate varieties of cause severe crop losses in vegetable crops in Azad Jammu and Kashmir. A detailed field survey was conducted in the vegetable production district of Sudhnuti district to measure the incidence and collection of vegetables targeted at RKN. A total of 65 sites were visited during the study, 47 sites were found to have 72% cases and a maximum weight of 2-8 points. Eggplant, tomato, cucumber, okra, beans, cucurbits, and

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peppers are considered local vegetables. Therefore, Parmanik et al. (2021) authorize the adoption of a protected plant as the end of all these difficulties. In recent days, protected or hot-growing cultivation of high value vegetables such as capsicum especially during the offseason has proven an increasing trend among small and low-scale farmers because it has a high value and low volume crop and produces high yields in many high quality areas.

Objectives of the Study
To explore the cultivation of hybrid vegetables in Kulgam district of Jammu and Kashmir

2. MATERIALS AND METHODS

In order to ensure that the researcher responds to the research problem, a detailed description of the procedures and methods used to carry out the research is explained systematically. This portion provides descriptions of study design, sampling technique, variables and their analytical estimation, data collection instruments, data collection methods employed and statistical tests used to analyze data.

Geographic location
The present study is carried in Kulgam district of Jammu and Kashmir, the sampling design adopted in the study was Stratified random sampling technique.

Sampling Design
Stratified sampling is based on grouping units into subpopulations called strata and then using a hierarchical structure of units within each stratum.

Survey Instrument and Data collection
The present study utilizes primary data for addressing the specific objectives of the study. The primary data for the present study were collected through questionnaire, containing general demographic data, education level and information concerning income and growth expectations.

3. RESULTS AND DISCUSSIONS

Age of the farmers
Table 1 represents age of the farmers. Out of 92 farmers, 38 farmers under the age group of 30 - 41 years, there were 40 farmers with followed by the age group of 42 – 67 years and there were 14 farmers with followed by the age group of 68 years with maximum.

Table 1: Age of the farmers

Age	Number of Farmers	Percentage
30-41	38	41.00
42-67	40	44.00
68 years & above	14	15.00

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Total	**92**	**100.00**

Fig 1: Age of the farmers

Total land holding of farmers (in ha)

Table 2 represents total land holdings of the farmers. Out of the 92 farmers, 30 farmers were marginal, who had less than one ha land, 22 farmers were small and who had 1-2 ha land and 33 farmers were medium, who had 2-4 ha land, followed by only 07 farmers was large who had more than 4 ha land.

Table 2: Total land holding of farmers (in ha)

Total Land Area (in ha) (n=92)	**Number of Farmers**	**Area (in ha)**	**Percentage**
Marginal Farmers (Less than 1 ha)	30	5.4	20.00
Small Farmers (1-2 ha)	22	23.85	45.00
Medium Farmers (2-4 ha)	33	29.85	32.50
Large Farmer (4-10 ha)	07	5	2.50
Total	**92**	**64.1**	**100.00**

Table: 3 Farmers land area under hybrid vegetable crops (in ha)

Area under Vegetable (in ha) (n=92)	**Number of Farmers**	**Area of land under hybrid crops (in ha)**
Marginal Farmers (Less than 1 ha)	30	10.20
Small Farmers (1-2 ha)	33	08.15
Medium Farmers (2-4 ha)	22	11.05
Large Farmer (4-10 ha)	07	02.05
Total	**92**	**31.45**

Farmers land area under hybrid vegetable crops (in ha)

Table 3 represent farmers land area under hybrid vegetable crops. Out of 92 farmers, 30 farmers were marginal who had less than 10.20 hectare cultivated land under hybrid vegetable crops, 33 farmers were small farmers who had 08.15 hectare cultivated land under hybrid vegetable crops, 22 farmers were medium farmers who had 11.05 hectare cultivated land under hybrid vegetable crops and 07 farmers were large farmer who had 02.05 hectare cultivated land under hybrid vegetable crops.

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Gender of the farmers

Table 4: Gender of the farmers

Gender (n=92)	**Number of farmers**	**Percentage**
Female	38	41.30
Male	54	58.70
Total	**92**	**100.00**

Fig: 4 Gender of the farmers

Table 4 represents gender of the farmers. Out of 92 farmers, 38 farmers were females and 54 farmers were males.

Findings and limitations

1. The present study explored that out of 92 farmers, 38 farmers were females and 54 farmers were males.
2. The present study found that Maximum farmers were marginal who had less land under hybrid vegetable crops and Minimum farmers were small farmers who had more land under hybrid vegetable crops as compared to marginal farmers.

3. CONCLUSION

Seed is the most fundamental and important ingredient for long-term agriculture. All other inputs respond to seed quality to a considerable amount, and it is believed that quality seed alone contributes to overall yield, depending on the crop, and that this may be increased with efficient management of other inputs. In this study it is found that maximum farmers were marginal farmers who had less land under hybrid vegetable crops and minimum farmers were small farmers who had maximum land under hybrid vegetable crops. Hence, agriculture department of Kulgam district of jammu and Kashmir should provide information to farmers so that they can cultivate hybrid vegetables in future and same will generate in good source of income for farmers and in long run will contribute to GDP of nation.

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