



Shalimar Kishan Ganga-2: An Extra-Early Maturing Maize Variety Enhancing Productivity and Farmers' Income in Village Kapran, District Anantnag, Jammu & Kashmir-A Success Story

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Challenges

Maize is an important food and fodder crop in the mid- to high-altitude regions of Jammu & Kashmir. However, cultivation in higher elevation areas such as Village Kapran, District Anantnag, is constrained by a short growing season, low temperatures, and early onset of autumn frost. Most traditional maize varieties have longer maturity duration and often fail to achieve their full yield potential under these challenging agro-climatic conditions. Farmers frequently depend on locally saved seed with limited genetic potential and have inadequate access to improved varieties and scientific crop management practices. These constraints result in reduced maize productivity, insufficient fodder availability, and lower farm profitability. Similar challenges are experienced across the highland regions of Jammu & Kashmir, where successful crop production depends on varieties with suitable maturity duration, cold tolerance, and stable performance under harsh environmental conditions.

Initiative

To address these challenges, Shalimar Kishan Ganga-2 (KG-2), an extra-early maturing maize variety suitable for temperate and high-altitude regions, was introduced through frontline demonstrations in Village Kapran, District Anantnag. The programme was implemented by ICAR-Indian Institute of Maize Research (ICAR-IIMR) in collaboration with ICAR Krishi Vigyan Kendra (KVK), Anantnag; Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir (SKUAST-K), Department of Agriculture, Jammu & Kashmir and local farming communities.

Before conducting demonstrations, farmers were trained on improved maize production technologies, including seed treatment, optimum sowing time, recommended plant population, balanced nutrient management, integrated weed management, and need-based plant protection measures. Scientists and extension personnel regularly visited demonstration fields throughout the crop season to provide technical guidance and monitor crop performance.

The demonstrations allowed farmers to compare the performance of Kishan Ganga-2 with traditional maize cultivars under local field conditions and observe the benefits of adopting improved varieties.

Key Results and Insights

The demonstration plots clearly established the superiority of Shalimar Kishan Ganga-2 over locally cultivated maize varieties. Its extra-early maturity enabled the crop to complete its life cycle within the limited growing period, allowing farmers to avoid terminal cold stress and early frost damage during critical reproductive stages.

The variety demonstrated:

- Excellent adaptation to temperate and high-altitude environments, particularly where the effective crop-growing period is short.
- Cold tolerance and early maturity, ensuring stable grain production under low-temperature conditions.
- Vigorous crop growth, uniform plant stand, superior cob development, and better grain filling compared with local cultivars.
- Improved grain yield along with quality maize stover production, strengthening livestock-based farming systems.

The successful performance of KG-2 in Kapran aligns with the broader success of highland-adapted varieties that have demonstrated consistent farmer preference in Jammu & Kashmir. Such varieties have been successfully cultivated across more than 2,000 hectares in the valley, covering diverse high-altitude production zones.

The adaptability of improved highland varieties has been demonstrated across areas including Gurez, Machil, Tangdhar and Sitahran in North and Central Kashmir as well as Aru Valley, Kapran and Kokernag in South Kashmir, highlighting their suitability across varying mountain agro-ecosystems.

The early maturity of Shalimar Kishan Ganga-2 also facilitated timely harvesting, enabling farmers to complete field operations before the onset of adverse weather conditions and improving overall crop management.

Impact

The adoption of Shalimar Kishan Ganga-2 significantly enhanced maize productivity and improved farm income in Village Kapran, District Anantnag. By combining extra-early maturity with higher yield potential and climate adaptability, the variety reduced production risks associated with short growing seasons and enabled farmers to harvest a stable and profitable crop. The demonstrations generated considerable interest among neighbouring farming communities, resulting in increased demand for quality seed and encouraging farmer-to-farmer dissemination of the technology.

The success of KG-2 demonstrates that improved, climate-resilient varieties with appropriate maturity duration can transform high-altitude agriculture by:

- Improving food and fodder security.
- Enhancing farm profitability.
- Reducing crop failure risks due to cold stress and early frost.
- Supporting sustainable maize-based production systems.

The continued adoption of highland-suited varieties across Jammu & Kashmir reflects their reliability and farmer acceptance. Varieties with strong adaptation traits have remained preferred choices among farmers for many years due to their dependable performance under challenging mountain conditions.

Lessons Learned

- Extra-early maturing maize varieties such as Shalimar Kishan Ganga-2 are highly suitable for temperate and high-altitude regions where the growing season is limited.
- Early maturity helps crops escape terminal cold stress and early frost, resulting in stable grain production.
- Improved varieties combined with recommended agronomic practices significantly enhance productivity and profitability.
- Large-scale adoption requires timely availability of quality seed and continuous technical support.
- Frontline demonstrations are effective tools for building farmer confidence and promoting improved technologies.
- Collaboration among research institutions, extension agencies, government departments, and farming communities is essential for sustainable agricultural development in highland regions.

Supporting Quote

Shalimar Kishan Ganga-2 matured much earlier than our local maize and produced healthy plants with well-filled cobs. Because it escaped the early cold conditions, we harvested a better crop and earned higher income. We plan to cultivate this variety on a larger area in the coming years. (*Farmers of Village Kapran, District Anantnag, Jammu & Kashmir*)



A) Local germplasm



B) Shalimar KG-2

Additional Information

The successful introduction of Shalimar Kishan Ganga-2 in Village Kapran highlights the importance of matching crop maturity duration with local agro-climatic conditions. The variety's extra-early maturity, cold tolerance, and improved yield potential enabled farmers to overcome the limitations imposed by short growing seasons and low temperatures. The intervention provides a scalable model for improving maize productivity, enhancing farmer income, and strengthening climate-resilient agriculture across the temperate and high-altitude regions of Jammu & Kashmir.

Research Partners

- ICAR–Indian Institute of Maize Research (ICAR-IIMR)
- ICAR Krishi Vigyan Kendra (KVK), Anantnag
- Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir (SKUAST-K)
- Department of Agriculture, Jammu & Kashmir
- Farmer Clubs, Self-Help Groups (SHGs), NGOs and progressive farmers

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