



Pioneering Sustainable Spices: A Success Story of Residue-Free Cumin Cultivation in Kutch

***Dr. Manish Kanwat¹, Ramniwas² and Avinash Bochalya³**

¹Principal Scientist & Head, CAZRI, Bhuj, India

²SMS (Horticulture), CAZRI, Bhuj, India

³SMS (Soil Science), CAZRI, Bhuj, India

***Corresponding Author's email: kanwatmanish@gmail.com**

Kachchh, the largest district in India, presents a challenging agro-climatic environment characterized by harsh climatic conditions, sandy soils with low water-holding capacity, irregular rainfall ranging from 250 to 350 mm, and entirely rainfed tracts in areas like Rapar taluka. Farmers in this region historically faced severe thematic problems, including the unavailability of irrigation, uncertainty in production, heavy reliance on chemical pesticides, susceptibility to devastating crop diseases like blight and wilt, and low market prices for their produce. To address these critical bottlenecks and transform the agricultural scenario of the district, ICAR-Central Arid Zone Research Institute (CAZRI) Krishi Vigyan Kendra (KVK) Bhuj stepped in with targeted interventions. Under the visionary leadership of Dr. Manish Kanwat, Principal Scientist and Head, alongside team members Dr. Ramniwas and Sh. Avinash Bochalya, the institute successfully implemented Front Line Demonstrations (FLD) on residue-free cumin cultivation under the Mission for Integrated Development of Horticulture (MIDH) programme during the year 2023–25. The initiative was meticulously structured around core thematic areas and executed through continuous on-field engagement, where the team provided critical bio-based inputs directly to 25 farmers across 10 villages in Rapar taluka—including *Trichoderma viride*, *Pseudomonas fluorescens*, *Paecilomyces lilacinus*, Phosphorus Solubilizing Bacteria, *Azotobacter*, *Bacillus subtilis*, *Verticillium lecanii*, *Beauveria bassiana*, botanical insecticides, and Azadirachtin—while maintaining rigorous, continuous field-level engagement, regular monitoring, and training on the high-performing GC-4 cumin variety across a total area of 25 hectares. Furthermore, collaborating with the Adesar Vistar Khet Utpadan Producer Company Ltd. (FPO), the project established strong collective marketing channels to secure premium value for safe, high-quality produce.

The outcome results of this comprehensive, science-backed initiative were exceptionally impactful: participating farmers achieved an average yield of 951.60 q/ha, incurring a gross cost of ₹69,800.55 per hectare against a gross return of ₹2,23,626 per hectare, which culminated in a substantial net return of ₹1,53,825.45 per hectare and a highly profitable Benefit-Cost (B:C) ratio of 2.20. Through FPO-backed collective marketing, growers successfully bypassed local market limitations (₹185/kg) to sell their residue-free cumin at a premium price of ₹235/kg, capturing a direct price advantage of ₹50/kg, while the intervention successfully eliminated major crop disease incidence, promoted eco-friendly farming practices, improved local knowledge of residue-free methods, and instituted rigorous scientific residue analysis to validate product safety. Ultimately, this MIDH-backed project under ICAR-CAZRI KVK Bhuj transformed the agricultural landscape of Rapar taluka, proving that strategic input support, continuous expert monitoring, and strong market linkages can drastically elevate farmer income and long-term sustainability in arid regions.