



Value Added Processing Product of Kachri and Product Management

(* Astha Verma¹, Dr. J. K. Tiwari¹, Nisha Pandwala¹ and Ajit Tippannavar²)

¹Swami Keshwanand Rajasthan Agricultural University, Bikaner, Rajasthan

²College of Horticulture and Forestry, Jhalawar, Agriculture University, Kota, Rajasthan

*Corresponding Author's email: asthaverma737@gmail.com

Abstract

Kachri (*Cucumis callosus*), a commercially significant cucurbit cultivated in the arid Thar Desert, is notable for its resilience to extreme abiotic stressors, including drought, salinity, and high temperatures. This fruit is integral to the local diet and culture, utilized in various traditional dishes and pickles, and valued both fresh and dehydrated. The processing of Kachri includes drying, pickling, and powdering, making it a versatile ingredient in regional cuisine, such as in the popular dish Panchkuta. Despite its importance, farmers face challenges in marketing and processing due to inadequate infrastructure and systematic approaches. Effective marketing strategies involve categorizing fruits into different grades to optimize pricing and processing. Properly managed, Kachri production can yield significant economic benefits, with potential earnings reaching up to two lakh rupees per hectare. Dry Kachri is in high demand and can be sold at competitive prices, enhancing its commercial viability. Addressing gaps in marketing and processing systems is crucial for maximizing the benefits of this valuable desert crop, ensuring both improved farmer incomes and better utilization of Kachri in various culinary applications.

Keywords: Kachri (*Cucumis callosus*), Pickle, Chutney, Powder, Abiotic stress

Introduction

The commercially significant cucurbit kachri (*Cucumis callosus*) grows in the dry areas of the Thar Desert. From seedling to all growth phases, it can withstand extreme temperatures and desiccation of water. Many abiotic stressors, including drought, salinity, extremes in temperature, ultraviolet radiation, an abundance or scarcity of light, heavy metal toxicity, air pollution, anoxia, and ozone, are experienced by plants throughout their life cycle. This crop may suffer a significant yield loss as a result of these abiotic stressors. The ripe fruits are typically boiled with different vegetable preparations, pickles, chutneys, and salad dressings (Goyal and Sharma, 2009; Singh and Joshi, 2010). For use during the off-season, mature fruits are also dehydrated. For desert dwellers, kachri is very important in social, cultural, and religious contexts. Fresh kachri fruits are utilized in Diwali Pooja, while dehydrated traditional fruits and vegetables like kachri, ker, sangri, tinda, etc. are distributed to family members in a unique gift pack called Dibai. In the arid regions of northern western India, a delectable vegetable called as panchkuta is commonly consumed, and kachri is one of its ingredients. The ripe fruits are peeled, dried whole or in slices, and then kept whole or as a powder. The dehydrated fruits have a lot of potential for use as an industrial crop because they are sold for between Rs. 30 and Rs. 50 per kilogram. To make several types of curry powder, kachri powder is combined with additional spices including cumin, methi, turmeric, coriander, and chilies as a souring agent. To make churan, kachri powder is also combined

with sugar, ginger, curing, black pepper, and other salts. (2007, Samadia). Product management and processing after crop production plays an important role in horticulture, but studies have found that in dry regions Special attention is not being given to less common fruit and vegetable products. Here, by working hard, good production can be achieved from these crops, but systematic marketing and safe storage or processing of the product is the real use of the product in its true sense. Similarly, this is also the case with the desert fruit-vegetable-Kachri like 'Apricot', which is produced on a large scale in this region, but due to lack of scientific marketing and processing, the farmers and those who use it do not get the necessary benefits. Used to be. Systematic marketing system of fresh Kachri fruits and wide publicity of products prepared from its processing is an important need of today's time (Meena *et al.* 2019; Meena *et al.* 2021; Tewari *et al.* 2018; Saroj, 2018).

A. Fruit marketing

Due to commercial awareness, the farmers of the desert area are now taking Kachri rain and summer crop production but due to not adopting proper methods of marketing, they are not able to get full price of fresh fruits from the market. Generally, fresh fruits are collected together and taken to the market due to which due to ungraded quality, fair price is not available. Therefore, it is most appropriate to divide Kabri fruits into three categories: largest, normal and smallest in size respectively. By classification, it is most beneficial to use uniform fresh fruits of normal size for marketing in the market and to use small sized fruits for processing. By adopting kachri crop production and production and processing management techniques in an integrated and planned manner, farmers can earn an income of about two lakh rupees from one hectare crop area.

B. fruit used and processing

(1) **Vegetable** :Use of fully developed and peeled fresh fruits of Kachri, Use of vegetables of various tastes; Mixed vegetables like cluster bean, cowpea, moth bean, round gourd, cucumber etc. prepared by cooking them singly or in combinations. Is done. Similarly, like tomato, fresh fruits of Kachri are used for giving special taste (sourness) in all types of pulses or whole gram, moth, moong, lentils, c etc. Whole fruits, rings, kutta or powder prepared by drying Kachri are used with many types of fresh and dry vegetables to give a special taste, of which panchkutta is the main one and is used in pulses. Similarly, vegetable raita prepared with fresh or dried clusterbean and kachri and curd is also popular.

Cluster bean kachri: A combination of cluster bean and kachri and is prepared by juicy, healthy and beneficial prepared. In this region, vegetables prepared from combinations of these two and various types of mixtures are cooked and served.

Ingredients: Green cluster bean (500 grams), onion (100 grams), green chilli (4-5 fruits), garlic (10-12 cloves), turmeric, red chilli and coriander powder (one -One spoon (or as per taste), asafoetida, cumin, mustard, cloves (as required), salt (as per taste) and oil (100-150 grams).

Method of preparation: Clean the fresh Kachri fruits and cluster bean thoroughly and cut them into small pieces. Also prepare onion, green chilli and garlic by cutting them. Fry onion, green chillies, garlic and spices in a pan with oil. Cook and mix Kachri and cluster bean and cook like a vegetable.

(2) **Pickle:** A small and fresh fruits of Kachri can be used in preparing pickle and its pickle is also as tasty and juicy as raw mango. It can be prepared with the following ingredients and method.

Ingredients: Fresh fruits (one kilogram), turmeric, chilli and coriander powder (25-25 grams), salt (25 grams or as per taste), whole mustard, fenugreek, fennel (25-25 grams), cloves, black pepper, dry ginger. And big cardamom (5-5 grams) and mustard oil (600 grams).

Method of preparation: Wash fully developed and fresh fruits with clean water and keep them in boiling hot water for 5 minutes. Make three-four long cuts with a knife on the fruits prepared in this way or they can also be cut into two parts. Grind the whole spices and make a paste. In a large pan, heat 200 grams of mustard oil well and cook the spices in it. After that, add the chopped fruits of Kachri well and take the pan down from the flame and mix it again. After some time, tie a cloth on it and keep it aside for 2-3 minutes. Keep in sunlight for hours. Fill the fruits prepared in this way in a glass jar and heat 400 grams of oil and after it cools down, fill the jar to the top. Keep the mouth of the jar covered with a cloth for four-five days and keep stirring the pickle.

(3) Chutney: Among the many types of chutneys with sweet, sour and spicy taste, Kachri chutney has a special place for its taste. Fresh or dried fruits of Kachri are used to make various types of concoctions and flavoured chutneys and are prepared in different ways goes. This delicious chutney can be prepared by the following method.

Ingredients: Fresh fruits of Kachri (1 kg), green chillies and garlic (50-50 grams), chillies, coriander and turmeric powder (25-25 grams), cumin (25 grams), black peppercorns and cloves (5-5 grams), mustard oil (250 grams) and salt as per taste.

Method of preparation : Wash fully developed and fresh fruits with clean water, keep them in boiling hot water for 5 minutes and cut them into small pieces. Similarly, clean green chillies and garlic and crush them well. Heat mustard oil in a pan and cook the spices along with green chillies and garlic well, then add cut pieces of fruits and cook on low flame for 10-15 minutes. The chutney prepared in this way should be filled in a wide mouthed bottle and kept in a cool place or refrigerator.

(4) Dry kachri and powder: The fresh fruits of Kachri are mostly used by drying them and storing them throughout the year for use in vegetables, chutney etc. Similarly, the dried and stored Kachri is used commercially to prepare its powder (Kachchurna) and various types of ready-to-use spices (ready to use spice powder). From drying studies in Kachri processing, it was found that by drying ten kilograms of its fresh fruits, about one kilogram of dry product is obtained. Dry Kachri can be used for processing at commercial level and is most suitable for crop production and self-employment in this area because about 100 quintals of fruits can be produced from one hectare crop area and 10 quintals of dry Kachri can be prepared from it. Dry Kachri is in highest demand in the market and currently it is sold at the wholesale price of Rs 60-100 per kg. The dried product can be stored for a long time by filling it in plastic boxes, polythene bags or pouches. Fully developed, healthy and fresh fruits are cleaned and prepared for drying by the following methods:-

(a) Peel the whole fruits and spread them on a smooth surface or polythene sheet or string them in the form of a garland and dry them.

(b) Remove the peel from the fruits and make round rings and dry them by spreading them on a smooth surface, polythene sheet or making a garland.

(c) Dry peeled whole or cut fruits by placing them in a machine running on electricity or solar energy.

d) Cutting the fruits of Kachri variety AHK 119 into round rings without peeling them and drying them is the most suitable method for preparing this powder.

Conclusion

Kachri (*Cucumis callosus*) is a valuable crop in the Thar Desert, offering significant cultural, economic, and culinary benefits despite its vulnerability to abiotic stressors. Effective management of Kachri production, including proper grading, marketing, and processing, can substantially enhance farmer incomes and ensure optimal use of the crop. Dehydrated Kachri and its derived products, such as powders and pickles, hold strong market potential due to their versatility and demand. By improving marketing strategies and processing techniques,

the economic viability of Kachri can be maximized, benefiting both producers and consumers.

References

1. Goyal, M. and Sharma, S. K. 2009. Traditional Knowledge and value Addition Prospects of Desert Region of North West India. *Journal of Traditional Knowledge*, 8: 581-585.
2. Meena, M. L., Singh, D. and Dudi, A. 2019. Traditional wisdom of post-harvest processing and value addition of arid land food. *Indian Farming*, 68(12): 49-54.
3. Meena, N. K., Meena, V. S., Choudhary, K. and Sharma, A. 2021. Traditional food for mitigating food and nutritional security in Western India during harsh period. *Indian Farming*, 71(6): 24-30.
4. Samadia, D. K. 2007. Arid Vegetables. In: Under-utilized and under-exploited horticultural crops. Peter, K.V. (ed.), Vol. 2. New India Publishing Agency, New Delhi (India), pp 153- 174.
5. Saroj, P. L. 2018. For Doubling Farmers Income. Exploring potential of arid horticulture. *Indian Horticulture*, 63(5): 3-16.
6. Singh, M. and Joshi, R. 2010. Famine food of Arid Rajasthan: Utilization, Perceptions and Need to Integrate Social Practices by Bio-Resolution. *Journal of Ethnobiology and Ethnomedicine*, 4: 121-124.
7. Tewari, P., Singhal, S., Kalash, P. and Jain, D. 2018. Entrepreneurship development through food processing. *Indian Farming*, 68(9): 56-59.