Kalingada Farming: Culture, Nutrition and Innovation

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ABSTRACT

A kalingada is one of the most important crops of arid and semi-arid regions of Gujarat and desert area of Rajasthan. Traditionally it was already in cultivation. Now a day, due to its rich nutritional composition and balanced profile of various amino acid, it is considered as a potential crop. It's cultivation is increasing day by day along with exploration of germplasm collection and development of improved varieties with quality parameters. Locally/traditionally, it was in cultivation for vegetable only. But in recent day, it is cultivated for seed, vegetables, oil and protein content. It is cultivated with low requirement of nutrient, irrigation water and other management practices. It is less affected by various biotic and abiotic stress, giving high net return comparison to other major crops, thus better to be known as climate-resilient crop. Apart from these, each part of this crop is useful for humankind and animals also. So, it is noteworthy to say that this crop is "**Kalpataru**" or "**Wonder crop**".

INTRODUCTION:

Kalingada is a one of the traditional and local vegetable crops of India, belongs to family Cucurbitaceae and its scientific name *is Citrullus lanatus* (Thunb) Matsum and Nakai. Generally, Kalingada is successfully grown in arid and semi-arid

regions. Kalingada is a creeping plant that spreads on the ground, with yellow flowers, with round/elliptical fruit and small watermelon like appearance. The fruits of this crop are not sweet in taste, so they are not used as a fruit but used as a vegetable (Saini *et al.*, 2026).

In the states like Gujarat and Rajasthan, Kalingada has been an important part of the local food culture. Locals know it by different names and use it in traditional dishes. In different states and regions of India, Kalingada is known by different names, such as Kalingada in Gujarat, Matera/Kalingad in Rajasthan, Matera in the Marwari region and Vegetable melon/Wild melon in the English language. These names reflect the local language, culture and food tradition (Paris, 2015).

It is most suitable for desert and low rainfall areas as it requires less water, has low cultivation cost and can be grown in harsh conditions. Kalingada has been grown as a mixed crop with bajra, castor, cluster bean, green gram and jowar during the monsoon as well as summer seasons over the years. It is mainly cultivated in the desert areas of Gujarat and Rajasthan and areas with low rainfall. It is mainly cultivated in Banaskantha, Vav-Tharad, Patan and Kutch districts of Gujarat and in Barmer, Bikaner, Jodhpur, Jaisalmer, Pokhran, Nokha, Charu, Sikar, Balotara districts of Rajasthan. These crops provide a good source of income to farmers at low cost, so the importance of crops like Kalingada is increasing.

1. Favourable conditions for kalingada cultivation

Proper weather and soil play an important role for the successful cultivation of Kalingada.

1.1 Weather

The climate of the arid and semi-arid region is most favourable for Kalingada. A mild cool climate at night is beneficial for fruit growth. Excessive humidity, fog or continuous rain can increase fungal diseases. Exposed sunlight is very important for crops. This crop can grow well even in temperatures of 25 to 40 degrees Celsius.

1.2 Land

Sandy as well as loamy soils are best for Kalingada. The soil needs to be well-drained, as waterlogging damages the vines and roots of this crop. Heavy black soils or highly loamy soils are not suitable for this crop. The pH of the soil is 6.0 to 7.5.

2. Farming Method

Karingada can be cultivated by both traditional and modern methods. Adoption of right farming practices increases both production and quality.

2.1 Preparation of the field

Plough the field horizontally and vertically to make the soil soft, loosened and well level. Mix 20 to 25 tonnes of well-decomposed farm yard manure per hectare at last ploughing. Prepare ridge beds rainfed areas so that water does not accumulate. Cultivation can also be done on flat land in dry areas.

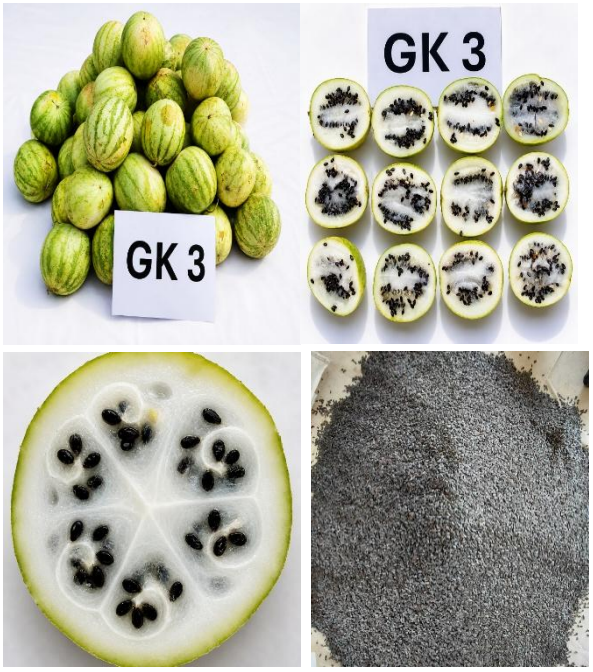
2.2 Time of sowing and variety

Generally, the crop is sown in two seasons.

1. **Kharif Season: June-July (when there is enough sowing rainfall)**

2. **Summer Season: End of February**

Sowing during this period leads to better crop growth and higher yield. Improved and high yielding varieties like Gujarat Kalingada 1, Gujarat Kalingada 2 and Gujarat Kalingada 3 developed by Sardarkrishinagar Dantiwada Agricultural University are recommended for cultivation of Kalingada in the state of Gujarat. The seeds of these varieties can be obtained by the farmer from the Centre of Crop Improvement, Sardarkrishinagar Dantiwada Agricultural University.



2.3 Method of sowing and seed rate

Apply fungicides and biofertilizer before planting the seeds because it gives good growth and increases the production. The sowing of kalingada is carried out by three main methods *viz.*, broadcasting, dibbling or row-planting and mixed cropping. These methods are chosen according to the soil, water, weather and farming practices of the area.

1. Broadcasting: This method is mainly adopted during the monsoon season. In this, the seeds are broadcasted in the field and then mixed with the soil. Sowing by this method requires 2 to 3 kg seed per hectare.

2. Dibbling or row-planting: In row system, a distance of 2 to 3 m is maintained between two rows and a distance of 1 m is maintained between two plants. Sowing in this way makes weed control easier and gives enough space to the plant. In this method, the seed requirement is 1.0 to 1.5 kg per hectare. In addition, for vegetable purpose, it is recommended to sow seeds in the summer season with a distance of 1 m between two rows and 1 m between two plants.

3. Mixed cropping: Kalingada can be grown as a mixed crop with bajra, jowar, cowpea, cotton as well as pulses. This method is especially beneficial in dry areas and is more convenient during the monsoon season.

2.4 Irrigation

Kalingada is mostly rain-fed crop and does not need to be irrigated as it is taken during the monsoon season. But, if the rains are withdrawn and there is a facility to water, then more production can be obtained if two irrigations are given during critical growth periods such as flowering and fruit setting.

Farmers who are planting this crop in the summer season should irrigate it lightly immediately after sowing and then irrigate it in the flowering and fruit forming condition as per the requirement. The use of drip irrigation system saves water and provides sufficient amount of water to the crop. This crop grows in less water, so avoid over-irrigation. Less water is given during the fruit ripening period which improves the quality of seeds.

3. Fertilizers and Nutrition

Cow dung manure is the main nutrient source for this crop. If the soil fertility is low, a limited amount of nitrogen, phosphorus and potash can be applied. If the cultivation is done in a mixed crop, there is no need to apply any type of fertilizer. But if the kalingada crop is taken alone, it is 40 kg nitrogen and 20 kg phosphorus is recommended for one hectare. In which 20 kg nitrogen and 20 kg phosphorus is applied as basal dose and the remaining 20 kg nitrogen is applied after 30 and 45 days. Avoid excessive use of chemical fertilizers as it can harm the growth of vines and also increase pest infestation.

4. Weed Management:

If kalingada is sown by broadcasting method, weeding should be done by hand for 20 to 40 days. If sown with dibbling (row-planted), carry out one intercutting after 25 days. The yield can be more obtained if the weed-free field is maintained.

5. Crop Protection:

No disease or pest infestation is mainly observed in the crops of kalingada, but if infestation of sucking insect pests is observed, spray systemic insecticides.

6. Harvesting

The kalingada crop is usually ready for seed in 75 to 80 days. Approximately 12 to 15 pickings are carry out over a period of two days in the crop sown for vegetables. The first harvest starts around 50 days. When the size of the tender fruit is the size of a tennis ball, it can be harvested and sold according to the demand in the market.

7. Production:

The average yield of seeds is around 500 to 800 kg per hectare. Also, if grown as a vegetable, the yield can be about 100 quintals per hectare.

8. Uses of kalingada

Kalingada is mainly used as a vegetable. Dried vegetables are made in Gujarat and Rajasthan. The seeds from the fruit of the kalingada are roasted and then used for eating. Dal is extracted from the seeds of kalingada, which is known as Magatsari. It is used in vegetables to make gravy as well as in sweet decorations. The pulp extracted from the fruit of the kalingada is used as animal feed. The stubble of the seeds left over from the seeds is used to make animal feed.

CONCLUSION

Kalingada is a traditional, eco-friendly and resource intensive vegetable crop. It has been cultivated for the years in states like Gujarat and Rajasthan. Crops like kalingada prove to be a promising option for farmers in the changing climate and water scarcity. With proper cultivation practices and conservation, these crops can become more important in the

future. Kalingada is an important endemic vegetable crop, suitable especially for the hot and arid regions of Gujarat and Rajasthan. These crops prove to be beneficial to the farmers due to their low cost, low water requirement and varied food uses. Along with traditional farming methods, kalingada still holds an important place in the local farming system.

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