A STUDY ON ISSUES AND CHALLENGES IN POMEGRANATE CULTIVATION IN CHITRADURGA DISTRICT

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Abstract:

The aim of this paper is to know the various issues and challenges in pomegranate cultivation in Chitradurga District. Pomegranate originates from Iran or Persia region. This crop has a history of some 5000 years there. The taxonomical name of pomegranate is *Punica granatum*. It is regarded as Fruit of Paradise due to its attractive arils, refreshing juice and fruit skin rich in medicinal properties. It adapts very well to very low fertility soils and comes up well in dry lands. Pomegranate stands at 18th place in world fruit consumption. In India too pomegranate is not such a favorite fruit like banana, mango etc. Even then the cultivation and trade of this fruit is on a large scale. Pomegranate is a popular fruit in European countries. It is mostly consumed as fresh arils. On a small scale it is used for juice, syrup, jelly, processed arils, wine etc. Pomegranate fruit skin and roots are extensively used in Ayurvedic and Ethno medicines. Pomegranates are fairly vigorous trees or shrubs which adapt well to regions that support citrus plants. There are also varieties suited for semi-temperate zones but these need well-drained soil and protection from excess moisture. Although the plant likes supplemental irrigation in summer for best fruit formation, overly wet soils and humidity can cause a variety of pomegranate tree diseases.

Fungal issues are part of growing pomegranate plants. Pomegranates perform best in areas with hot, dry summers, which means northern gardeners in cooler regions with plentiful rainfall may find raising the tree a challenge. The most frequent complaint is pomegranate tree diseases that affect the fruit. Many fungal issues will cause some leaf drop, but this is generally not enough to affect overall tree health. The fruit is the reason for growing the plant and there are many diseases that will cause splitting, rot and an overall appearance and taste that are unappealing. This study is based on secondary sources of data such as websites, articles, research papers, books, magazines and many more.

Keywords: Issues, Challenges, Pomegranate Cultivation, Chitradurga District etc.

INTRODUCTION:

Pomegranate originates from Iran or Persia region. This crop has a history of some 5000 years there. The taxonomical name of pomegranate is *Punica granatum*. It is regarded as Fruit of Paradise due to its attractive arils, refreshing juice and fruit skin rich in medicinal properties. It adapts very well to very low fertility soils and comes up well in dry lands. Pomegranate stands at 18th place in world fruit

consumption. In India too pomegranate is not such a favorite fruit like banana, mango etc. Even then the cultivation and trade of this fruit is on a large scale. Pomegranate is a popular fruit in European countries. It is mostly consumed as fresh arils. On a small scale it is used for juice, syrup, jelly, processed arils, wine etc. Pomegranate fruit skin and roots are extensively used in Ayurvedic and Ethno medicines.

Pomegranate export earns a handsome foreign exchange for our country. India stands 1st and Iran in 2nd position in pomegranate production. It is vice versa in export trade. China, Afghanistan, Turkey, Spain, Israel and USA are the other major producers of pomegranate. In India it is cultivated in 1,13,000 hector area with around 7,50,000 metric tons of production. This is almost 50% of the worlds production. In India Maharashtra stands 1st and Karnataka in 2nd position in pomegranate cultivation. Other major states producing pomegranate are Rajasthan, Gujarat, Madhya Pradesh, Andhra Pradesh and Tamil Nadu. Almost 50% of Indias production comes from Maharashtra alone. Belagavi, Vijayapura, Bagalakote, Koppala, Ballary and Chitradurga are the major districts of Karnataka producing pomegranate. This crop has spread to Tumakur, Kolar and Bengaluru rural districts in recent years.

Pomegranate (Punica granatum L.) is one of the most remunerative fruit crops grown in Maharashtra. Its ability to resist drought, wide adaptability to soil and climatic conditions profitable is without much care and ability to flower in all three seasons has put it way ahead than other crops. Pomegranate is originated in Iran and extensively cultivated in Mediterranean countries like Spain, Mexico, Iran, Egypt and Afghanistan. In India 2 lakh hectares area under pomegranate crop, which is mainly grown in states of Maharashtra, Gujarat followed by Rajasthan, Uttar Pradesh, Haryana, Andhra Pradesh and Karnataka. Maharashtra stands first in the country in respect of area and production of pomegranate. At present 1,75,000 hectares area under pomegranate crops with 18, 00,000 tones production, 6.0 million tones per ha productivity and 66.21 per cent total share in production. Pomegranate growers necessarily get benefit as per the production cost.

Pomegranate can be planted in any season with assured irrigation. But June-July is the best season for fresh planting. Farmers targeting very high yield are adapting high density planting with 6x8 feet or even 6x6 feet spacing. But the canopies of the plants overlap within 2 years and become difficult to manage. High density plantations get infested with bacterial blight and fungal wilt very easily. Hence the best recommended spacing is 15 feet from row to row and 10 feet from plant to plant or 12x12 feet. These spacing accommodates around 300 plants per acre. Let the rows be in North-South direction in length to avoid shading each other. Dig 2 cubic feet pit and expose it to sun for one month. Dust the pit with 100 grams of bleaching powder. Then fill the pit with sand, fertile clay soil and top soil one part each. Add 10 kilograms of cow dung manure, 1 kilogram of vermi-compost, 1 kilogram of neem cake and 500 grams of super phosphate to each pit. Adding 25 grams each of PSB, Trichoderma and other bio-control microorganisms is also recommended. Then take up shallow planting. Press the soil around

the plant gently. Water the plant regularly and take enough care till it puts out new growth. Stalking may also be given. Recently trench system of planting is practiced by many farmers to save labour cost on digging pits. First the land is ploughed thoroughly and deeply. Then shallow trenches are made by tractor driven implement at 12 feet or required spacing. Planting is done in these trenches at 12 feet distance after installing drip irrigation system. Most of the farmers put manures after one month instead of at the time of planting.

It is better to provide sufficient quantity of cow dung manure, vermi-compost, neem cake and other organic inputs. It ensures good growth and enhances disease resistance of the plant. Put recommended quantity of balanced chemical fertilizers as well. For a first year plant put 10 kilograms of farm yard manure, 100 grams of Nitrogen, 150 grams of phosphorus and 50 grams of potash. For a second year plant 20 kilograms of farm yard manure, 200 grams of nitrogen, 100 grams each of phosphorus and potash are recommended. Later on follow recommended schedule as the plants are put for flowering. Take up foliar spray if the deficiency symptoms of micro-nutrients are seen. Spraying cow urine, vermi-wash and Panchagavya produce good results.

Pomegranate plant is basically bushy in nature. Many shoots emerge from ground level. Retain 3 to 4 shoots and cut off the remaining ones. Pinch the tip of the shoots at 2 feet height to induce branching. Encourage 5 to 6 lateral branches on each shoot at 1 feet height to get well spread canopy. Many farmers put the plants for flowering at the age of 10 months itself to get early crop. This is not a good practice. Take up pruning after 18 months. The best practice is pruning at 24th month. This is very important for the good health of plant and the garden in the long run. Keep on removing sprouts from ground level and flowers on these small plants. Otherwise it disturbs the vegetative growth. Intercrops are possible between the plant rows for 2 years. But it is not practiced in commercial pomegranate gardens. Farmers concentrate on nourishing pomegranate plants to get good growth and early crop. Pomegranate flowers only once in the spring in cool climate of north India. But in the tropical climate of central and south India it gives out more flowers in 3 seasons a year. Flowering in June-July is called as Mrig Bahar, September-October is Hasta Bahar and flowering in January-February is Ambe Bahar. Complete rest for the pomegranate plants is possible in April-May months and hence it flowers profusely in June. This Mrig Bahar is the rainy season and hence the crop needs less water. But the insect and disease infestation is more. It brings down the quality of the produce. This is not a good season for cropping in areas with high rainfall and with bacterial blight disease. Hasta Bahar comes just after the rainy season and hence it is difficult to give proper rest for the plants. It results in poor flowering. But the fruits grow under full sunshine and hence the yield and the quality of the fruit will be excellent. Pest and disease problem will also be less. These fruits are best suited for exports. Ambe Bahar is in hot summer. Hence we get heavy flowering and more yield. Pest and disease will be less. But the fruits ripen at the end of summer season. The crop may suffer with water shortage resulting in poor quality. If the pruning is delayed crop may be affected with early monsoon showers and hailstorms. But

the demand and price for pomegranate fruits will be better in Indian and export markets in this season. Decide the cropping season depending on prevailing pest and disease situation in your region, availability of irrigation water and market demand for the fruits. The rest for the plants before pruning is most important.

OBJECTIVE OF THE STUDY:

The aim of this paper is to know the various issues and challenges in pomegranate cultivation in Chitradurga District.

RESEARCH METHODOLOGY:

This study is based on secondary sources of data such as websites, articles, research papers, books, magazines and many more.

ISSUES AND CHALLENGES IN POMEGRANATE CULTIVATION IN CHITRADURGA DISTRICT:

- **Effects of Climate Change:** The effects of climate change affect farmers' ability to grow the food we all need. Increasingly volatile weather and more extreme events – like floods and droughts – change growing seasons, limit the availability of water, allow weeds, pests and fungi to thrive, and can reduce crop productivity. Soil erosion is reducing the amount of land available for agriculture, and declining biodiversity affects the pollination of crops. At the same time, farmers are under pressure to conserve water and use fewer agricultural inputs. As they adapt to these changes, farmers also need to mitigate the greenhouse gas emissions contributed by agriculture through adopting climate-smart practices – a new learning journey for many.

- **High capital investment:** Since pomegranate crops have two year gestation period and initial cost of establishment of orchard is high, it becomes almost impossible for the poor and marginal farmers to go for such ventures of their own.

- **Improper functioning of grower, co-operatives:** Due to improper functioning of the growers, co-operatives, the growers' body cannot deal effectively with marketing problems of agricultural commodities. Latest information on market price and other market information cannot be disseminated from time to time to safeguard the interest of both the growers and the consumers against the exploitation of the market by un-scrupulous traders.

- **Insufficient extension activities:** Dirth of insufficient number of trained staff, poor staffing pattern for horticultural development work and low priority of horticulture in the development plans of the state are some of the factors responsible for ineffective extension programmes.

Research information that have been made available from the various research centres of ICAR, CSIR, CAU etc. could hardly be transferred to the desired extent to the farmers' fields and the extension programmes could not be organized on sound technical lines.

- **Inadequate use of manures and fertilisers:** Inadequate use of manures like cow-dung or vegetable refuge and chemical fertilisers makes Indian agriculture much less productive

- **Lack in adoption of technologically advanced management systems** The emergence of digital technologies such as cloud computing, mobile technologies, social media, the Internet of Things (IoT), video surveillance, and recognition technologies has benefited the marketing of pomegranate fruit on a global level. Developed economies such as the USA, UK, Germany, and Australia have adopted technologically advanced management systems to market pomegranates. Nevertheless, these systems are in the introduction phase in the Indian market, especially in Maharashtra. These management solutions help farmers during all phases of pomegranate marketing, such as advertisement, customer engagement, tracking of export shipment, post-harvest infrastructure management, physical security and surveillance of pomegranate farming resources, irrigation management, integrated pest, and disease management, real-time tracking of pomegranate pricing, remotely controlling marketing processes, and many more. The current generation of pomegranate producers is facing the challenge of a need for more awareness about these technologically advanced management systems. However, this challenge's impact is expected to be reduced if the next tech-savvy generation of pomegranate producers adopts these management systems for pomegranate marketing.

- **Lack of Knowledge about the export standards and process**: The international market has a considerable demand for pomegranate fruit. The Indian pomegranate industry has various export companies to address the pomegranate demand of the international market, which most farmers do not engage in pomegranate export activities due to a lack of knowledge about export procedures and scope on international markets. Moreover, it is observed that the farmers have various myths in mind related to the loss and damage of export shipments.

- **Lack of marketing facilities:** The most challenging task faced by the farmers in Chitradurga District is that of marketing. The poor returns .available to the growers are largely due to the lack of organized marketing structure that may lift the surplus produce from the growers at a reasonable price. The short post-harvest life of most of the produce and lack of cold storage facility to store these perishable fruits compel the growers to sell their produce to the middle 'men at uneconomically low prices. Estimates made at different times show that, in general, a fruit orchardist receives only 10-15 per cent of the consumer price and only in a few selected

pockets adjacent to cities; townships or retail markets the growers can expect about 60-80 per cent of the consumer price.

- **Lack of Location of the nearby markets:** The availability of centralized marketplaces near the pomegranate production areas is essential to reduce the cost of transformation, get access to various marketing strategies and get a better price for the fruit based on its quality. Not having access to centralized marketplaces acts as a restraining factor for farmers to get involved in the marketing of pomegranates, as they have to be dependent on pomegranate vendors/export companies/ agents for sales of their pomegranate productions. The availability of centralized marketplaces also allows farmers to communicate with other producers, share knowledge about production and marketing, and participate in marketing strategies for better outcomes.

- **Planting materials:** The use of desirable plant type alone contributes very significantly in the future performance of pomegranate plantations very little attention has been paid on such vital issues like large scale propagation of selected and desirable plant types and their distribution to the growers. Most of the nurseries are manned by nonprofessional's. The quality of the plants multiplied at various nurseries is not good and almost no care is taken in certifying the mother plant for its clonal purity as well for its freeness from transmissible diseases.

- **Pomegranate pricing fluctuations:** The supply of pomegranates in the market and pricing methods play a vital role in pricing the fruit in the market. Farmers usually plan production by considering the availability of resources such as financial budgets, labor, and weather conditions. These factors are responsible for the quality of the fruit, which most farmers need to get reasonable pricing for the fruit. However, only 31% of the farmers get reasonable pricing as they sell their products in the APMC market. This is because farmers still need to decide the pricing of the pomegranate.

- **Poor cultivation practices:** The per unit area production figures of almost far below the India average and the poor yield is mostly due to neglect and absence of scientific cultivation practices. In pomegranate, against an all India average of about 15.5 tonnes per hectare, the average in Chitradurga District- is about 7.4 tonnes per hectare. Poor productivity of most of the pomegranate is due to use of inferior crop varieties and faulty agronomic practices. It may not be unfair to say that there is perhaps no concept of modern orcharding in the entire region of Chitradurga District and whatever produce is Obtained comes mostly as nature's gift.

- **Poor transport facility:** Transportation is one of the major problems faced by the pomegranate growers of Chitradurga District since the farms and orchards are located in remote and interior areas in the absence of good and reliable roads. A good percentage of money is being spent by the farmers on transportation, Thereby, denying the worth profit to be gained by the cultivators.

- **Problems of processing:** For a region like Chitradurga District the success of pomegranate growing' is closely linked with the success of fruit processing units. The positive demand pulled by the processing industry can only help in sorting out the problem of proper disposal of perishable commodities like fruits. Only a few processing units have been established in Chitradurga District and the present position of these fruit processing units is not good and some of the units are already closed due to heavy loss.

- **Slow pace in adoption of technology:** The current progress of the industry is encouraging but the expected rapid growth has not taken place. The primary reason for such a slow growth is because of low awareness level amongst the people about application of new technology. Although within the country the research groups have put a lot of efforts in standardizing protocols for several fruits crops. The benefits have not been sufficiently demonstrated to the farmers at the field level. Therefore, technology is not so popular at the gross root level.

CONCLUSION:

Pomegranate is an essential fruit in India. It is called Wonder Fruit because of its excellent health benefits. One pomegranate contains about 40 percent of the daily requirement of vitamin C. Pomegranate fruit is popular because of the refreshing winey flavor of its juicy seeds known as arils. The name "pomegranate" is derived from the Middle French "pomme grenade," - which means "seeded apple." Pomegranates have been symbols of prosperity, hope, and abundance in every part of the world. Pomegranate fruit has significant demand as fresh fruit, powder, juice, concentrate/pulp, seed oil, and other pomegranate-derived products in food & beverage, pharmaceutical, and cosmetics industries across the globe. India has many advantages for pomegranate exports. First of all, we have highest area and production. The best varieties with attractive colored skin and arils and soft seeds are available. Year round production is possible in most of the crop regions of India. Major production areas of Maharashtra and Karnataka are near to Mumbai port. Hence it is easy for exports to Gulf and European countries. There are many pomegranate research stations across the country. Pomegranate export zone is established in Maharashtra. All pomegranate farmers' cooperative societies have joined hand to establish an apex organization called Maha Anar for export trade. Pomegranate export facility center has come up at Baramati. Farmers are being trained for the production techniques for pomegranate export. Global Gap certification is done. Pomegranate export is realized under the trade name of MahaPom. There is lot of scope to increase pomegranate exports using all these facilities.

As of now a major portion of pomegranate production is utilized for domestic consumption. Volume of exports is very less. Good demand and price in the domestic market are the reasons. The present international price for pomegranate is not that attractive looking to the cost of production. It is necessary to increase yield or productivity to bring down cost of production. Inflow of pomegranate to European markets from Iran and Spain recedes after January. Hence Indian fruits have good demand between February and July. There is lot of scope to popularize Indian pomegranate in the consumer markets of Canada, USA and South American countries. We can target even South-East Asian countries, Australia, Japan, Korea and other countries. Eastern ports need facilities for the export of fruits from Karnataka, Andhra Pradesh and Tamil Nadu. Our farmers are getting INR 60 to 80 per kilogram on average. This brings an attractive income if the yield is good. We can sustain the same price even after area expansion if we explore new markets. But the need of the hour is to develop disease resistant variety to enhance production and productivity. India is expected to come to first position in the export of pomegranate soon. Pomegranate is the only crop generating huge income for dry land farmers with very less irrigation water. Let us hope that the crop stabilizes and brings prosperity for these farmers.

REFERENCES:

- Adsul GB, (2013). "Constraints and suggestion made by the Pomegranate growers for adoption of improved practices for control measures of oily spot disease", Agriculture Update, 2013; 8(4):609- 612.
- Agricultural Finance Corporation ltd, (2007). Project report on export promotion of pomegranate from available at: http:// www.apeda.gov.in/apedawebsite/trade_promotion/study_report/studies_export promotion of pomegranate from India.
- Department of Agriculture, Cooperation and Farmers Welfare, (2018). Horticultural statistics at a glance, Government of India. Available at: http://agricoop.nic.in/sites/default/files/Horticulture%20Statistics%20at%20a%20Glance-2018.pdf
- Deshmukh BA, (2017). "Knowledge level of pomegranate growers in western Maharashtra about disease management", Contemporary Research in India. 2017; 7(3):288-294
- Howal AA (2009). "A study on attributes and constraints of the pomegranate cultivators of Solapur district", (Maharashtra). Agriculture Update. 2009; 4(3&4):282-284.
- Karthik, K.B., (2009). A study on diffusion of hybrid paddy seed production technologies in Mandya district. M. Sc. (Agri.) Thesis, Univ. Agri. Sci., Bangalore.
- Lathwal, O.P. (2010). Evaluation of frontline demonstrationon blackgram in irrigated agro ecosystem. Annl. Agric. Res., 31 (1&2) : 24-27.

- Ms. Dhanashri Landge et al. (2020), Study of various marketing challenges and strategies for pomegranate fruit in Maharashtra, International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056, Volume: 09, Issue: 12, Dec 2020.
- Mishra, D. C. (1990). New directions in extension training. Aconceptual Frame work, Directorate of Extension, Ministry of Agriculture, New Delhi, India.
- Nagesh (2006). Study on entrepreneurial behaviour of pomegranate growers in Bagalkot district of Karnataka. M.Sc. (Agri) Thesis, Univ. Agri.Sci., Dharwad.
- Nagesha (2005). Study on entrepreneurial behaviour of vegetable seed producing farmers in Haveri district of Karnataka, M.Sc. (Agri) Thesis, Univ.Agri.Sci., Dharwad.
- Naveen (2012). "Study on entrepreneurial behaviour of pomegranate growers in Chitradurga district of Karnataka", M.Sc. (Agri.) Thesis, (Unpub.), Univ. Agric. Sci., Bangalore, 2012.
- Prashanth R (2018). "Knowledge level of farmers regarding improved cultivation practices of pomegranate crop in Chitradurga district of Karnataka", Journal of Pharmacognosy and Photo Phytochemistry. 2018; 7(3):1766-1768
- Ramesh Madhav Jadhav et al. (2019), Critical analysis of marketing constraints faced by pomegranate growers in Ahmednagar District of Maharashtra, Journal of Pharmacognosy and Phytochemistry 2019; SP3: 53-54.
- Ramesh, P et al. (2007). Feasibility of organic farming – A farmers' survey in central Madhya Pradesh. Kurukshetra – A J. Rur. Dev., 55 (4): 25-30.
- Raut PN (2006). "Production constraints of orange cultivation in Nagpur district of Maharashtra", Asian Journal of Extension Education. (2006) 25(1&2):1-4.
- Singh, Ishwar et al. (2018). Training manual on production and marketing of pomegranate for export quality. Chitradurga District Pomegranate Production Organisation, Bhilwara, pp. 26-27.
- Singh, P.K., et al. (2011). Adoption behaviour of vegetable growers towards improved technologies. Indian Res. J.Extn. Edu., 11(1): 62-65.