

Production Trends & Prospects of Pear Cultivation in Jammu and Kashmir, India



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Abstract

Pear (*Pyrus communis*) is an important temperate fruit, primarily grown at an altitude of 1,500-2,400 meters above mean sea-level. However Low-chilling cultivars of pear have adapted very well in the subtropical climates. The Present study aims to analyse the production trends and spatial distribution pattern of pear at the State and National level. The results reveal that the area under pear cultivation has increased from 2296 hectares in 1974 to 14475 hectares in year 2015 registering a phenomenal compound annual growth rate (CAGR) of 4.75%. On the other hand the pear production increased from 7655 MT in 1974 to 107377 MT in year 2015 depicting a (CAGR) of 6.8% during the study period. Jammu and Kashmir contains approximately 1/3 of the total harvested area in India and contributes 30-35% to the national pear production. Furthermore, the results reveal that, unlike apple, pear cultivation is almost evenly distributed across all the districts of the state especially in the Pir Panjal region of Jammu division. Agricultural statistics of (2015-16) indicate that 52% of the area under pear cultivation lies in the Jammu division and 48% is distributed in the Kashmir Valley. However owing to higher yields in Kashmir valley, 69% of the pear production comes from the Kashmir Division alone. Pear cultivation is generally less labour and capital intensive in nature. In addition, it has got better climatic adaptability and great potential to improve the economic status of the marginal farmers in the mountainous belts of the State, which are not ideally suited for apple cultivation. If proper attention is paid by the Government by providing improved high quality cultivars, training and extension services to the farmers, pear cultivation has potential to enhance livelihoods and stabilise the income levels of households of farmers especially in the non apple growing districts especially backward mountainous regions of the State.

Keywords: Temperate Fruit, Pear Cultivation, Compound Annual Growth Rate, Pir Panjal, Agricultural Statistics, Capital Intensive, Climatic Adaptability.

Introduction

Agriculture sector plays a very important role in economic development of J&K State which is ranked 15th in the agriculture production at all India level. Agriculture contributes around 27% to the J&K State's economy. Approximately 70% of its population is dependent on agriculture and absorbs about 48% of the total work force of the state (DOS-2015). Diversification of Agriculture in State towards high value commodities, i.e. fruits, vegetables and livestock products is taking place at a faster pace and is reflected in the high share of High Value Commodities (HVCs) in agricultural production in various districts of the state.

Horticulture is emerging as an important sector providing ample opportunities for sustaining large number of agro-based industries which generate substantial employment opportunities. Although, the horticulture sector of Jammu and Kashmir is dominated by apple cultivation, but during the last four decades courtesy of crop diversification, the area under non-apple fresh fruits has also witnessed considerable expansion. Pear, apricot and citrus fruits are also becoming popular and are having a significant acreage in the mountainous belts of Ladakh and Jammu divisions of the State (Dar, 2017).

Pear is considered as an important temperate fresh fruit globally. Pears, like apples, are available in multiple varieties. The pear is native to coastal and mildly temperate regions of the Old World, from Western Europe and North Africa right across Asia. It is a medium-sized tree, reaching 10–17 metres (33–56 ft) tall, often with a tall, narrow crown; a few

species are shrubby. They are fragile when ripe, and hence are always harvested before they are completely matured. Pears contain special phytonutrients, including anti-inflammatory flavonoids, anticancer polyphenols, and anti-aging flavonoids. Furthermore, it is one of the best sources of vitamin C, vitamin K, and boron. It can help lower inflammation, which is the root cause of most diseases. According to FAO (2016), China is the largest producer of pear in the world contributing approximately 69% to the Global production. Canada, Russia, USA, India and Argentina are other important producers. Italy is an important producer in the European Union contributing around 35% to the European output.

Number of research studies has been recently conducted on the productivity and areal expansion of non-apple fruits in the Study area owing to their competitiveness, sustainability, agro-ecological adaptability and other socio-economic factors. Yasmeena Ismail et al., (2019) in their study on the productivity trends of cherry crop observed that the area under cherry cultivation in Jammu and Kashmir is increasing from 1974-2017 and the productivity has also shown an increasing trend except for some recent years where the trend is found declining. Ali et al., (2018) in their study on the horticulture in the cold desert region of Ladakh observed that Apricot (*Prunus Armeniaca*) being main fruit crop and cash crop of Ladakh region has enormous scope and potential for further improvement in future with the understanding of importance of soil health management, availability and the use of improved plant materials particularly suitable to the agro climatic conditions of the area and by inducing post harvest technologies. Furthermore in a recent study on walnut cultivation in J&K, Malik et al., 2018 studied spatio-temporal characteristics of walnut cultivation in Jammu and Kashmir State, revealed that the area under walnut cultivation has registered an increase and consequently boosted the production.

Around 20 per cent area of the state is under horticultural crops. Horticultural sector contributes around 5000 crores to the annual income of the state of Jammu and Kashmir (DOS-2017) observed that horticulture occupies very important position in the predominantly agricultural economy of western Himalaya, among all the fruits grown in the Kashmir. Horticultural sector contributes immensely to strengthen the financial condition of Jammu and Kashmir. Horticulture is the mainstay of the economy in Kashmir with 2.3 million people associated with the sector and 237000 hectares of land in valley under fruit cultivation. This is a core sector of Jammu and Kashmir agriculture.

Similar studies highlighting the significance of horticultural crops in the research area include Mir (2014) for economic viability of apple production, Malik and Choure, (2014) for employment opportunities associated with horticulture in J&K, Bhat (2014) for dominance of apple in terms of production and acreage in J&K, Rajeshri and Ali (2016) role of horticulture in sustaining livelihoods, Ahmed (2013)

for production trends of apple, Masoodi, (2003) for geo-ecological requirements of apple cultivation in northern states of India.

However an empirical study carried out by Zulfiqar (2015) explored the potential impediments faced by horticultural sector and draws our attention to the fact that the horticulture sector in the valley of Kashmir has lost its glory and pride. The research uses empirical methods to indentify factors responsible for a decline in the horticulture sector. Similarly, Wani et. al. (2015) revealed that the apple cultivation in Jammu and Kashmir is an old age activity and is vital for the sustainable development of the region.

Despite being second important temperate fresh fruit of the State, no empirical study has been carried out to analyse productivity of pear, its spatial distribution pattern, and economic potential. Therefore the present study is a preliminary effort to fill the research gap in this area and provides vital information and statistics pertaining to various aspects of pear cultivation.

Study Area

The state of Jammu and Kashmir is located in the North western folds of Himalayas in the Indian sub-continent extending between 32° 17' to 37° 6' North latitudes and 73° 26' to 80° 30' East longitudes covering a total geographical area of 222236 sq.km (Hussain, 2000). The state falls in the great North-western complex of the Himalayan Mountain Ranges with marked relief variations, snow-capped summits, antecedent drainage, complex geological structure and rich temperate flora and fauna. Owing to its favourable climate and diverse relief, it is ideally suited for pear cultivation. The yields are good and quality is excellent. Pear is a prominent temperate fruit belonging to family of Rosaceous and it is ideally grown at 1500 to 2400 metre above sea level in J&K. On account of high adaptability to climatic and pedogenic regimes it is grown from temperate to sub-tropical regions across India. In India pear is mostly cultivated in J&K, Himachal and Uttarakhand and other low chilling varieties' are also cultivated in other sub-tropical region

Data Base and Methodology

Present study is based on the secondary sources of data obtained from Directorate of Horticulture Kashmir, Digest of Statistics- Directorate of Economics and Statistics Govt of Jammu and Kashmir. Data pertaining to all India pear Production has been also obtained from Food and Agricultural organisation (FAO) 2016 Statistical data base. To draw the inferences and conclusions Time Series Analysis and Compound annual Growth Rate (CAGR) was used to ascertain the temporal trends in Area, Production and Productivity in pear cultivation in Jammu & Kashmir.

Result and Discussion

India is the fifth largest pear producer at the global level (FAO-2016). India has witnessed substantial expansion in the area under pear cultivation during the last four decades. The area under pear cultivation has increased from 9300 hectares in 1975 to 42000 hectares in 2015

registering a compound annual growth rate of 3.75 %. Pear production during the same period has also witnessed a significant increase from 56000 Metric tons in 1975 to 303000 Metric tons in 2015, which translates in to a compound annual growth rate of 4.2% which is evident from figure (1.1 & 1.2). Pear by virtue of being generally less Capital and labour intensive and requires lesser amount of fertilisers, insecticides and canopy management is being preferred by the small and marginal farmers in the hilly regions of the country. It is largely disease resistant and climatically more resilient and adaptable fresh fruit which has resulted in its rapid areal expansion in temperate areas. Some of the low chilling cultivars are also becoming popular beyond

the traditional belts and are spreading in the sub-tropical regions of the country.

The introduction of new and improved cultivars of superior quality and longer shelf life in Himachal Pradesh in the areas which are not ideally suited for apple cultivation has been a success. The quality and the yield has shown promising results as the market statistics reveal that a box of high quality pear (20 kg) has fetched approximately Rs. 2200 which is at par or slightly higher than the traditional cultivars of apple in that state. Therefore area and the production of pear are expected to increase further, which could secure India's position among the top pear producers of the world.

Fig. 1.1 Trend in Area under Pear cultivation at all India level (1975-2015)

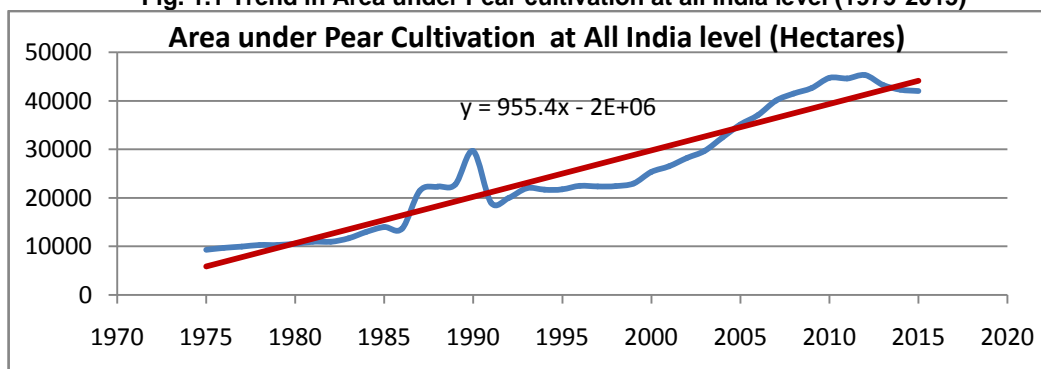
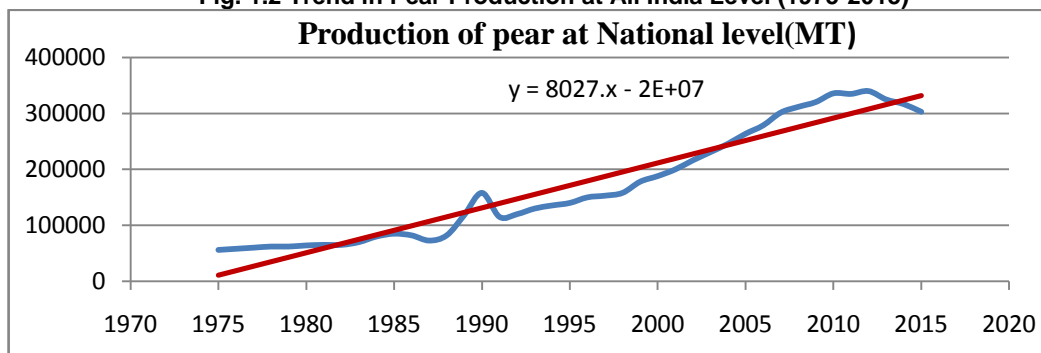


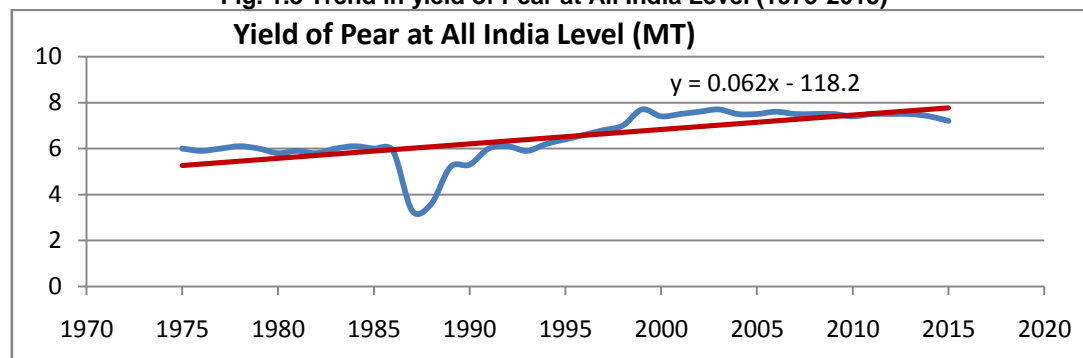
Fig. 1.2 Trend in Pear Production at All India Level (1975-2015)



Despite the fact the national pear production has increased substantially during the last four decades; its growth is largely attributed to the areal expansion rather than improvement in the productivity of pear. As indicated by the Figure (1.3) the yield of pear appears to be stagnant hovering around 6-7 MT/Hectare from 1975-2015. Appreciable progress in this

regard is yet to be achieved. Introduction of improved cultivars with high quality and better yield is the need of the hour to improve economic efficiency of pear production, which will ultimately safeguard and improve the livelihoods of small and marginal farmers in the mountainous regions of the country.

Fig. 1.3 Trend in yield of Pear at All India Level (1975-2015)



Pear Production Scenario in Jammu and Kashmir

Jammu and Kashmir is a prominent pear producing state of India. It contributes approximately 1/3 to the National pear production and accounts for about 34% of the total area under pear cultivation in India as per the (2015) Agricultural statistics. On the long-term basis the area under pear cultivation has witnessed a significant increase from 2296 hectares in 1975 to 14475 hectares in year 2015 registering a CAGR of almost 4.7% during the last 40 years. The

overall pear production has also increased from 953 MT in 1975 to 107397 MT in 2015, thereby registering an overall increase of 1100% during the same period, which account for CAGR of 12.54%. Despite the fact that pear yield of Jammu and Kashmir is lower than the national average, it has shown considerable improvement from 1975-2015, due to which the contribution of J&K to the National Pear production has significantly increased from around 10% to 33% during the last four decades (fig: 1.4,1.5,1.6).

Fig. 1.4 Trend in Area under of Pear Cultivation in J&K (1975-2015)

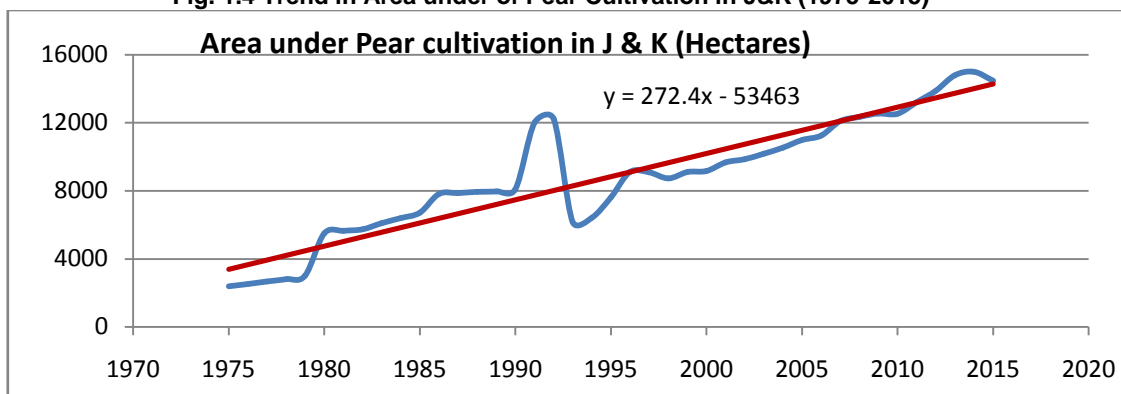


Fig. 1.5 Trend in Production of Pear in J&K (1975-2015)

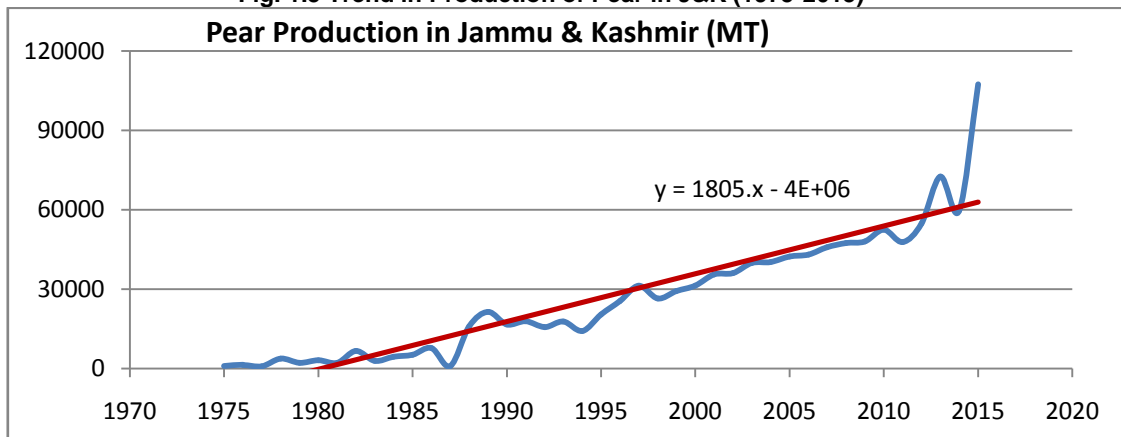
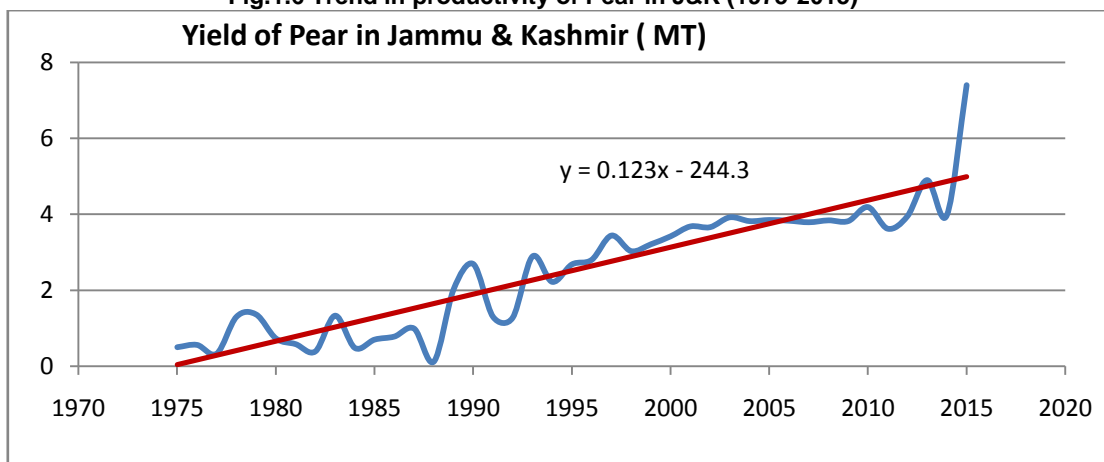


Fig.1.6 Trend in productivity of Pear in J&K (1975-2015)



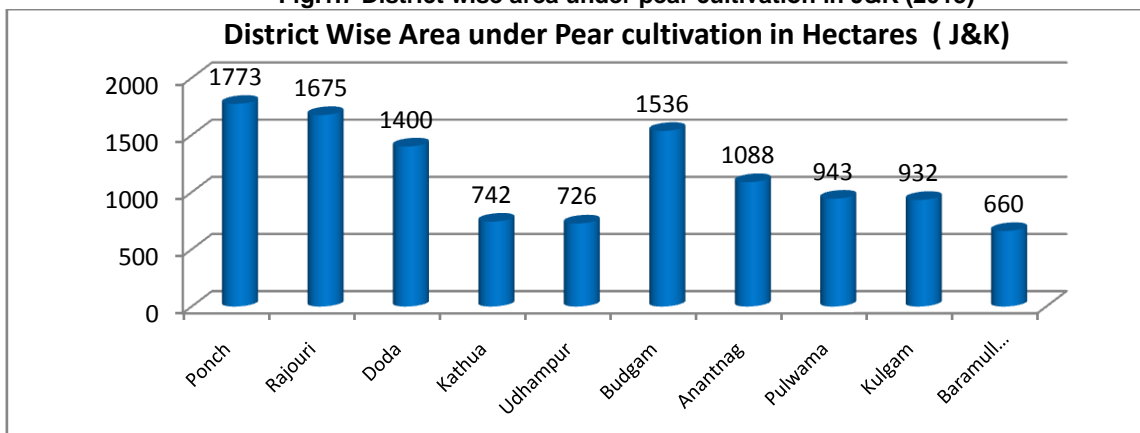
One of the most important aspects of pear cultivation in Jammu and Kashmir is its widespread distribution. Unlike apple, its cultivation is not restricted in few districts of Kashmir valley; rather it is

having substantial acreage in the Pir Panjal Region in the Jammu division. It is the only temperate fruit crop of the state, having more than 50% of the harvested area in the Jammu Division (Fig.1.7). Percentage wise

48% of harvested area lies in the Kashmir division, while as the remaining 52 % lie in the Jammu

Division. Poonch Rajouri and Budgam are the three district with largest area under pear cultivation.

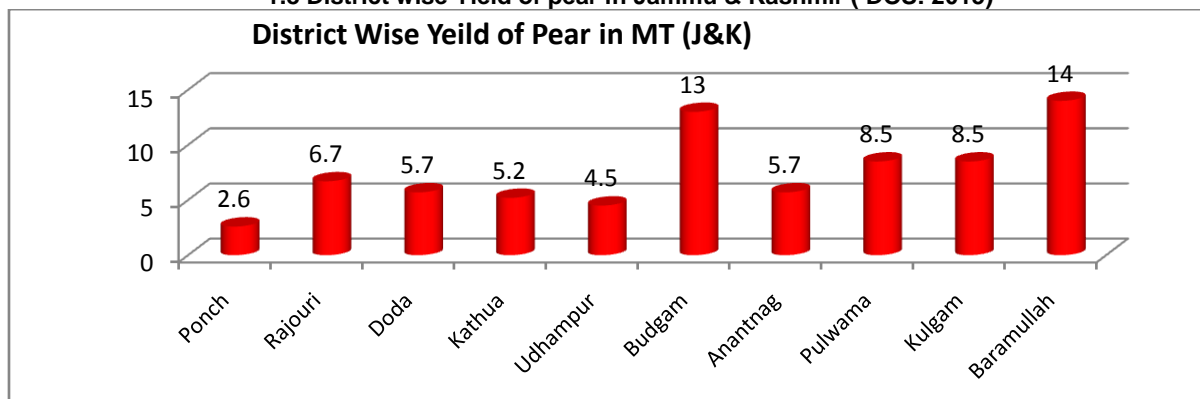
Fig.1.7 District wise area under pear cultivation in J&K (2015)



This fruit has great scope in the rouged mountainous and rain fed regions across the Jammu and Kashmir. In the present study it has been also observed that Jammu division despite having 52% of cultivated area, contributes 31% to the states pear production, while as Kashmir Valley having 48% harvested area contributes 69% to the total pear

production of Jammu and Kashmir. This is mainly because of yield differential as the yield of pear in Kashmir valley is higher than the national average. Baramullah, Budgam, Pulwama and Kulgam are the leading districts in terms of yield (fig.1.8). The higher yield in the Valley may be attributed to, favourable climate, deep fertile soils and irrigation facilities.

1.8 District wise Yield of pear in Jammu & Kashmir (DOS: 2015)



Conclusion

Pear is an important temperate fruit of J & K which has a great potential on account of high productivity and climatic adaptability. It is a fairly well distributed fruit especially in the non apple growing districts of the state, where it could boost the income levels of the farming community. It requires less maintenance and input costs. The main aspect of pear production is its maturity period which spans from July to September, and is usually associated with a lean period for the apple cultivation. The labour and transport cost during that period is comparatively cheaper and market is readily available. Its harvesting period also coincides with the tourist season which gives the producers the additional marketing advantage. Furthermore if the pre and post-harvest infrastructure is updated, and introduction of high quality, High yielding cultivars is promoted by the Government, this sector can really make a difference in the income levels of farming communities across the state.

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