



## STUDY ON BARRIERS OF STRAWBERRY PRODUCTION

Akshay Kumar

Research Scholar, Magadh University, Bodh Gaya, Bihar.

Assistant Professor, GNS University, Jamuhar, Rohtas Bihar.

\*Corresponding author email: smarthancy@gmail.com

### ABSTRACT

The district of Bihar is known as holy palace of God Surya and also named as city of God Surya. The city has its own identity in cultural diversity and agricultural heritage where maximum festivals are celebrated and all seasons contribute in shaping agriculture worthy. Major source of the resident of their livelihood are farming. Various crops are grown but it would hardly be sufficient for their survival. Tendency towards income growth, management in agricultural process, technological changes and innovation in farming encourages cultivators to produce commercial or value crops as vegetables, fruits and organic essential crop. Modernization in farming also helps in selecting best crop suitable to climate, soil, irrigation facility and available resources leads farmers to cultivate value crops like mushrooms and strawberry. Strawberry (*Fragaria vesca*) is an important cash crop productions in Aurangabad gave new life to the farmers and widen the periphery of agro sector. The story of farming strawberry in Aurangabad is as equal as the history of strawberry introduction in Mahabaleshwar. The products cultivated in the places are demandable because of delicious and nutrient content found in it at greater extent. The strawberry production was like a hard nut to crack in sub-tropical areas and within sandy loam soil. The selection of time and cultivated land for particular species of strawberries are the big challenge. The development of agricultural practices in these areas has been developed by individual farmer efforts. The Government roles in facilitating and building infrastructure aren't as expected as requirements. Other facet of challenges is to post management of output. The major issues have been observed and discussed in the research paper are storage availability, transportation facility and marketing of products. The innovative measures in keeping output for long time, using frozen transportation facility to supply goods and digitalization in marketing for better price decision are the challenges which should be minimized by government interventions so that cultivars of that region engage themselves in farming for long time. Farmers involve in strawberry production yielding good returns and getting appreciation for building new milestone. The production of the cash crop is more beneficial in developing farming community

**KEY WORDS:** Value crop, frozen transportation, Farming community, Digitalization, *Fragaria vesca*.

### INTRODUCTION

Aurangabad is one of the 38<sup>th</sup> agrarian districts of Bihar. It is one of the 5<sup>th</sup> districts of Magadh division with a geographical area of 3389 Km<sup>2</sup>. The southern hilly ranges and the northern Gangetic Plains form two physiographic units of the Aurangabad district. The southern hilly unit is undulating in character, occupied by high mountain ranges and low valleys covering parts of Kutumba, Nabinagar, Deo and Madanpur blocks. The constituting rocks of the hills dip northward and form the basement of the northern lying Gangetic Plain. At the transition parts from hard rock to alluvial plain, the hard rocks are exposed (linearly) at places as inliers. These soils are composed of very fine to fine sand and clay. These are gray to grayish yellow in color and moderate to heavy in texture. The Aurangabad district falls in the Punpun River Sub-basin. It forms the major drainage and the entire Aurangabad district falls in the watershed of the river. The district fall in the South Agro-Climatic Zones of Bihar and dry and cold winter (October to February) records mean minimum temperature as 9.20C in January.

The people of the district mostly depend on agriculture for their livelihood and sustenance. There is a culture of double harvesting within a year in the district somewhere

are triple cropping seasons in the district. Strawberry production helps to achieve easily three cropping seasons. People in many parts fail to achieve this due to lack of irrigation facilities and soil nature. Strawberry is one of the best-loved fruit in any parts of the world. Indeed, people from all walks of life really enjoy the venerable strawberry<sup>[1-5]</sup>. In addition to being a delicious fruits, the sweet and red strawberries are alluring to almost everyone. Strawberry grows well under temperate climate. It can also be grown in sub-tropical climate. Day light period of 12 hrs or less and moderate temperature is important for flower-bud formation. Each variety of strawberry has a different day length and temperature requirement. On the length of the light period, strawberries are placed in two groups: (1) varieties that develop flower buds during both long and short light periods, the overbearing varieties and (2) varieties that develop flower buds during the short light periods only, most commercial varieties. Sandy loam to loamy soil with pH 5.7-6.5 is ideal for cultivation which is readily found here. Strawberry has advantages of easy propagation, early maturity and high yield with 5-9% sugar. The variety of strawberry is produced in the district particularly like winter dawn, Nebila and camarosa which require long and short light period to develop flower buds.

Strawberry is cultivated in Himachal Pradesh, Uttar Pradesh, Maharashtra, West Bengal, Delhi, Haryana, Punjab, Rajasthan and some of the district of Bihar like Aurangabad. Panchgani is famously called strawberry country situated hardly 200 km from Mumbai is the best producer in India.

Strawberry is rich in Vitamin C and iron. Some varieties viz. Olympus, Hood & Shuksan having high flavor and bright red color are suitable for ice-cream making. Important strawberry varieties cultivated in India are Chandler, Tioga, Torrey, Selva, Belrubi, Fern and Pajaro. Other varieties include Premier, Red cost, Local Jeolikot, Dilpasand, Bangalore, Florida 90, Katrain Sweet and one of the kinds Pusa Early Dwarf which is developed by "Indian Agriculture Research Institute, Delhi" India exports strawberry mainly to Austria, Bangladesh, Germany, Jordan & U.S.A.

Major purpose of the study is to identify and analyze the problem come in the way of cultivation. Specially, emphasis has put on transportation facility, storing facility and Marketing and market facility. It is also essential the management of agricultural inputs as well as natural resources to develop status of farmers. To boost its production there is need to develop infra-structure like transportation, road connectivity, electricity, irrigation facilities and market which would help farmers to retain in farming and secure income level. The facilities provided by the government are null. Farmers themselves get training to go out or in touched with people of the other place. Government should take responsibility to trained cultivators and get them aware with how to cultivate commercial corps so as they can get proper and regular income through farming practice.

### 1. Brief about Farmer

The paper will remain incomplete if story of Balkeshwar mehata ji isn't discussed. He is the man who has struggled more to bring the cash crop Strawberry in his native land. Coincidentally, he went to Mahavaleshwar with his friend to work in agricultural land of Strawberry. He inspired to see that it can be grown on my village's land after then he return back to bring with some runner plant of strawberry and sowed it in his land. This way the Strawberry has introduced in holy land of God Surya. The story of advent of Strawberry dates back over ten years. Today four, five farmers produce these crops on more than ten acres of land and still waiting for Government intervention whereas chief minister of Bihar Shri Nitish kumar has visited Strawberry farm recently. Although, Farmers kept engage them with optimism that sooner or later a day will bring pleasure and happiness.

### 2. Objectives of the study

The main objective of this paper is

- The study focuses on analysis of transportation facility and warehousing facility for the purpose of improving it.
- Major intent of the commercial crop productions to develop farmers' income through digitalized and modernized marketing techniques.
- To identify the hindrances in the path of strawberry production.

- Major purpose of the study is to offer useful suggestions for strengthening strawberry production and developing farming community.

### 3. Prospects of Strawberry Farming

Strawberries are rich in Vitamin C and provide superb source of Fiber, Carbohydrates, Potassium, Phosphorous, Magnesium and calcium. Sometimes it used as herbal medicine, an herbal tea made from leaves, roots and is believes to aid in the treatment of diarrhea. Roots are used to increase urine flow and to treat Gonorrhoea. Fruits are used to treat kidney stone. Many of these products are derived from strawberry like Jam, Jelly, Crush, Syrups, Ice- Cream, Candy, and Wine etc. It's also used in Pizza, Cake, and Beauty Products too. Strawberries are a popular addition to dairy products. Strawberry relishes are predominantly used in ice cream, milkshakes, smoothies and yogurts. Strawberry pie is also popular and its pigment extract can be used as a natural acid/base indicator due to the different color of the conjugate acid and conjugate base of the pigment<sup>[6-8]</sup>.

### 4. Challenges in farming

Cultivation of strawberry in Aurangabad was a daring step in itself. The difficulties faced during cultivation either pre-production or post productions are at massive amount. The study has made an attempt to identify the problems come in the way, beginning from importing or acquiring runner plant of strawberry to final production and harvesting to selling. The major post production issues have been eyed during observation. The fruit ripens during late February to April in the plains. It is highly perishable product requires great deal of care in harvesting and handling. Marketing of the strawberry also requires to be organized carefully. Usually the fruit is picked in the early morning and sent to the market in the afternoon of the same day or is picked in the late afternoon, stored overnight in a cool place, and sent to market the following morning<sup>[9]</sup>.

The study focused on post-production issues viz specially on transportation facility, storage facility and marketing mechanism and has attempted to explore the innovative and digital techniques to restrain the problem encounters.

#### 4.1. Transportation

Transportation and communication play major roles in selling product at frequent rate on desired price in the market. It is indispensable to be a better transportation system where strawberry cultivated so that fruits can easily reach to the market on time without damages and spoilages. It is perishable in nature requires good care after harvestings. It should be packed in flat shallow containers of various types (cardboard, bamboo, paper trays etc.) with one or two layers of fruits.

The transportation facilities in these regions are not worthy even there is lacking in transportation frequency and direct connectivity to the metropolitan town. That's why cultivators bound to sell it in local market. Efforts must to be paid on developing Logistics facility and supply chain management which would directly benefit in taking skimming price. In addition to these frozen transportation facility or air-cooled logistic would be the best alternative to send goods on time without impairment of product. It is matter of serious concern that producers are obliged to sell in restricted marketing option if supply

chain management is improved then they can take advantage of metro market response. Therefore it is mandatory to improve logistics facility and supply chain which will assist in exporting bulk of production to the competitive market on suitable prices.

#### 4.2. Storage Challenges

Storing the harvested products is another major difficulty before the farmers. Strawberry fruit is traded under fresh and frozen form on account of its inherent perishable attribute. In addition to being consumed fresh, strawberries can be frozen, made into preserves, as well as dried and used in such things as cereal bars<sup>[10]</sup>. It needs to support the farmers to develop frozen processing facility to preserve the products for long time. The dried strawberries are also more demandable and it is possible when it could store safely.

#### 4.3. Marketing of Products

It is as difficult to sell as it is to store because of unpreserved in nature. Greater attention should be paid on harvested fruits to store so that easily can reach to market. Cultivators are producing these products for ten years before, but there is cypher in the name of development. Government has not developed any facilities for marketing these products yet. In addition, Marketing of the product mostly based on convenience of transportation if it well then we get good price.

The products of these areas are sold out in local as well as metro market. Firstly, Local market Aurangabad, Gaya, Rohtas, and Ara is more preferable and secondly squad of marketing come from metro city mostly from Kolkata for full season at cultivated land. The members of the marketing team pluck fruits packed and sent it to the market for sale. These products are sold through contract selling. Marketing team takes guarantee to buy all produce at negotiable price for full seasons<sup>[11]</sup>.

Since, products are sold through direct selling and contract selling. It is hardly sufficient for this purpose. Marketing of the products on proper prices influence directly to the production that's why it is needful to usage of innovative and digital methods for desirable prices which will boost and multiply the agricultural practices of cash crops. Various techniques can be used in sells promotion and creating awareness. The Promotional activities, Government intervention and introduction of Digital and online marketing methods can be more supportive measures for the region.

#### 5. Research Methodology

The nature of this paper Challenges and Prospects of strawberry Production in 'Aurangabad Bihar' is purely on descriptive. The Data used in this study is based on personal observation through contacting peasants. It has been carried out at agricultural spot village Chilki near Amba Bazar, belonging Kutumba block in the district of Aurangabad, Bihar, India in connection with devoted farmer Balkeshwar mehata ji and direction and guidance of Senior Scientist KVK (krishi Vigyan Kendra) Siris, Aurangabad. Till today less than ten farmers are engage with their small pieces of land and available resources. The primary data has been collected through meeting with each farmer by direct personal interview. The effort through this de facto research study has been taken for analysis and interpretation of data and attempt has been made to identify the problem encounter in post harvesting

management and explore ideas suited for Geographical environment of Aurangabad strawberry cultivation and developing farming community. The data from secondary sources are also used in it according to the need of this study.

#### 6. Analysis and Interpretation

Strawberry production in this reason is the reward of farmers' labor. Farmers are facing lots of problems in production, distribution and storage. I have examined during the study that no any facility or initiation driven by government. All input resources like runner or crown, fertilizers, irrigation, mulch etc. are invested on the part of oneself pocket. Few of farmers have availed the facility of mulch, tools and pipes for dripping or sprinkler irrigation. After analyzing all variables it wouldn't be enough to say the agricultural practices is performed in the district is the merit of farmers where they have tried to develop their livelihood. Government should pay special care to mobilize resources and also should be given subsidies on the total output of valued crops. Sprinkler or tools for dripping irrigation, mulch and fertilizers are the major input which should also be made available at subsidizes rates. It needs to make farmer trained and aware about new technology and modification in agricultural practices. There should be taken care to build store houses and construct road connectivity to big market.

#### 7. Suggestions

Some sorts of suggestions have been advised after analyzing the problem. To handle the challenges and improving the status of farmer, it should be followed.

There should be provision in connection and direction with local authority to celebrating a special day in a year or should be arrangement to held weekly or monthly fair in the name of strawberry. Government should also promote in association with the advertisement of Department of tourism and Development. There are many places to visit in the district and government official should also take interest in promoting these. Government should assist in inviting online merchant or trader and strengthen them to buy bulk of produce.

Subsidies and convenient financial facility should be provided to construct frozen processing unit and develop ware house for product particularly. District cooperative society should come forward to train the farmers and make them aware about innovative agricultural practices. Flexible financing facility should also be provided to encourage the strawberry producer.

Government has provided facility to sale these goods through online platform eNAM, GrAM, and AgMarket designed to provide price information of best buyers from across country in transparent way even after that the farmers are deprived from such facilities. Even the district cooperative society isn't playing its role. Establishment of strawberry processing plant will encourage more farmers. It would be helpful in employment generation as well as agricultural development and promotion.

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