

Agricultural Practice And Changes: - A Study In Medieval India.

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Abstract:

India as a predominantly agricultural country attributes a major share of its overall development to the agricultural sector. Up to 1990, agriculture played a vital role in the Indian economy. At present large number of people are employed in this sector. After the consecutive three great famine (1880, 1898, 1900) the Government of India wanted to set up a central department of agriculture. The prime motive of the department was, to look after the agricultural development and famine relief in the country. In 1890 Dr. J.A. Voelcker,¹ an agricultural chemist of the Royal Agricultural Society of England was sent to India to advise on the best course to be taken for improving Indian agriculture. In his report on “Improvement of Indian Agriculture”, he recommended systematic prosecution of agricultural enquiry, and the spread of general and agricultural education through research and teaching in India. In this way the colonial government taken so many initiatives to improve the agricultural production. Then the need to bring about a rapid increase in food production in the years after independence necessitated for the re-examination of the existing system of agricultural research and education. It was realized that the goals of increased production could be achieved only through application of science and technology to agriculture. An attempt has been made in this paper to understand, the methods of agricultural production in pre-colonial period. The importance also given in this paper to understand, each process of production and understand it from the realm of modern science.

Key words:-Arthashastra, Agriculture, Phal, foot-plough, Technology.

The question that lies before us is, what methods were adopted in the pre-colonial period and how scientific those methods were? The question is important from the view that the pre-colonial India followed more or less the same method of production over a period of thousands of years. From *Arthashastra* to *Nuskha Dar Fanni-Falahat* there does not seem to be much change in the methods, tools and technology. However, it does not mean that the period did not undergo any kind of change. Introduction of new crops and grafting technology and improvement on variety of fruits bear the fact that the peasants were not averse to new technology or change.

Agricultural production constituted the bulk of production during the medieval period. The income from agriculture was the main source of state revenue. The medieval India had vast areas of land cultivated by peasants residing in this geographical area. The European travelers who came to India in this period described that Indian peasants followed similar methods in agricultural production similar to that of theirs in Europe. The peasants cultivated the traditional crops but when they were exposed to the new crops they produced it with the same zest and zeal. Abul Fazl says that during the rule of Akbar, in each locality as many as 41 crops were cultivated in a year.² The method of agricultural production since ancient times has not been static and it has changed according to the needs of times. The Tughlaq rulers tried to improve the agricultural production by introducing the irrigation facilities. Firuz Shah Tughlaq laid the largest network of canals. Similarly, the tradition of Delhi Sultans to construct canals was continued by the Mughals rulers as well. For instance, the canals built during Shahjahan's reign carried water from Yamuna and irrigated a larger area. The soil of India helped the peasants in growing various types of crops and the agricultural technology, irrigation facilities, manures, seeds helped in introducing new crops. The medieval Indian peasants produced a variety of food crops, cash crops, vegetables and spices. They were familiar with various advanced techniques of crop cultivation of their times viz., double cropping three crops harvesting, crop rotation, use of manures and range of devices for irrigation etc. According to Irfan Habib "No fundamental change in the structure of the ox-drawn plough seems to have occurred. The plough shown in Gandhara sculpture of the early centuries of the Christian era is not very different in shape from that pictured in the illustrated manuscript of the dictionary, *Miftahu'l Fuzala*." However, the ancient text *Manusmriti* speak about the use of small 'iron tip' in the plough, in the other hand the iron share in the fifteenth century plough is quite large and heavy (Habib, 2008). John Fryer, in the year 1670, Francis Buchanan, in 1801, and H.M. Elliot in 1842, observed the different

types of ploughs used in different regions depend on the nature of soil. Francis Buchanan in 1801, witnessed large plough drawn by eight oxen, the iron coulter weighing about 3.3 kilograms.

The principal food crops produced were wheat, rice, millets (jowar, bajra), barely, and variety of pulses. Cash crops grown in this period were sugarcane, indigo, cotton, silk, opium, and tobacco. Different types of fruits and vegetables crop cultivation developed rapidly during the medieval period. Spices like pepper, clove, cardamom, turmeric, saffron, betel-leaf, etc. were some of the important spices produced by the medieval Indian peasant.

Irfan Habib in his book “The Agrarian System of Mughal India 1556-1707”³ speak about the methods and technology that were used by the Indian peasants during Mughal period. while taking about the “means of cultivation and irrigation” he says that “ set against the great achievements of modern, scientific agriculture, it might seem difficult to imagine anything more primitive than the traditional implements of the Indian peasant. In the context of the world three hundred years ago, however, these provoked little comment”. When discussing the technology and animal that were used for the land cultivation he says “Though oxen were yoked to it, never horse, the Indian plough was no stranger to European eyes”. Some of the other scholars like, Terry who writes about Medieval Indian agriculture called it “foot-plough”, which was also used in England. Another English traveler Fryer who visited India said that “Combies (Kumbis)” till the land, and dream the corn with no remarkable difference from other nation. He did not found any difference in the use of ploughs, except that “their coulters [are]” unarmed mostly, Iron being scare, but they have hard wood [which] will turn their light grounds”. The observation of this scholars could have only suitable for the areas like costal belt. And he observed all these types of use of technology in the costal belt, where he spent his large time. Whereas Habib and other scholar did not agree with Fryer arguments. For them Iron was used with wooden plough, where the soil was very drier and hard, and they said this types of practices were mostly found from the Ancient times in India.

Miftahu-l-Fazala,⁴ a dictionary, also explain the use of agricultural technology during medieval period, where it talks about the use of “Iron coulter,” and Phal is the Hindi term that is mentioned in this dictionary. Which was used to break the soil. This dictionary also have the details description of a plough with such an “Iron coulter.” Irfan Habib argued that “it is true that iron

was scarce in medieval period, but its mining and manufacture were wide spread and the price in term of wheat was not more than twice the price in 1945.” While comparing the Indian agricultural methods with European agricultural methods, he says “Indian agricultural methods were far from primitive when judge by the standard of the day.” The other agricultural methods that were followed during medieval period was like “Drill-Sowing and dibbling. Rice transplantation methods was also used during medieval period. All the transplanted rice was put in regular furrows.

Another important methods in agricultural production during medieval period was, the land rotation system. It was found that in some region peasant followed one cropping pattern, some other region they followed two-cropping pattern, and it also found that some of the peasants followed three-crop rotation system in a year. Habib argues that “The large portion of the land was single-cropped, (known as *Yak-fasla*) being sown with crops of both harvests in succession.” And this single-cropped pattern being sown either for the rabi (Spring) or Kharif (Autumn) harvest. But the area which were followed the double-cropping pattern (*do-fasla*) being sown with crops of both harvests in succession. When peasant followed the single cropped pattern, that time the land remained fallow for about half the year. But when they followed the double-cropped pattern peasants were cultivated different types of crops. Apart from that, the peasants of Bengal followed the Three-rotation cycle. Where they produced rice, tobacco, and cotton. (*Irfan Habib, The Agrarian System of Mughal India, p 27.*)

The unique features of Indian agricultural production has been the different types of crops that cultivated by our peasants. Ain-i-Akbari, an important primary source of the Mughal period talks about the cultivation and revenue rates for sixteen crops of the rabi session, which were cultivated in the circle of the Agra province. Then it mentioned that twenty five crops were cultivated during kharif session. Like this all provinces cultivated number of crops in this two session throughout the year. Habib in his book “*The Agrarian System of Mughal India*”, argues that “The peasant of Mughal India had the knowledge and skill to deal in a large inventory of crops whose cultivation the tropical climate made possible.” Now I am going to discuss the province wise agricultural production, methods of irrigation, trade and commerce during medieval period.

During the Medieval period, the main provinces were not just the centres of consumption but were also the centres of production. From Delhi Sultanate time to Mughal period, importance was given to production of valuable crops which were given final touch at the provincial headquarters and were sent to the market for sale. ⁵Sugar and Cotton were two such products which were produced in rural areas but it was the urban centres which made them as finished goods. The location of Delhi province itself was very useful for the agricultural production. Because it was surrounded by vast hinterland, and directly connected with different rivers, like, Sutlej on the west, Ganges and Yamuna in the north. ⁶ Rivers, good climatic condition, and nature of soil, helped the common people in cultivation of different kinds of crops. Some of the regions harvested three crops in a year. ⁷

The location of the two provinces like Lahore and Delhi was an advantage for the rich hinterland, the plains and alluvial soil helped the regions, to cultivate different types of food grains throughout the year. Food grains like rice, crops, barley, wheat, grain, oilseeds, and sugar were the popular products of these regions. Among them rice was the dominant food grain, which was produced in these two regions. ⁸ Banaras also had a rich hinterland. The region and its surrounding areas were known for production of bamboos at Latifpur. ⁹ Different kinds of vegetables and cereals, fruits, ¹⁰ fish, sugarcane, and poppy etc. were found in this region.

Water was used for different purposes i.e. – agriculture, human needs, garden, running of fountain and building purposes. All these water came from the rivers, tanks, canals, reservoirs, wells and lake. By using different types of mechanism, water was drawn from the origin, and supplied within the city area, or the fort area, ¹¹ or for the irrigation purpose. It also found that medieval rulers were dug different canals for the irrigation purpose. Apart from that wells water was also used for the agricultural production. There were two kinds of wells, one was ordinary wells, and the other were the step wells. Reservoirs, and tanks were also found in most of these regions. ¹² In both, Patna and Banaras, water was being used from rivers, tanks, and wells for irrigation purpose. Different types of methods were being used for the lifting of water from these wells.

During medieval period, both Commerce, ‘Industry’, and Bazars, played a vital role for the import and export of the agricultural and non-agricultural products. Lahore acted as a main entry point for the merchants who were coming from central Asia. ¹³ During the reign of Jahangir the

region and the inflow and outflow of the merchants increased rapidly, as he abolished all the transit dues in Kabul, which was one of the noted towns on the route to Hindustan.¹⁴ This majorly benefited the people of Iran and Turan, and the merchants from Persia, Armenian and Mughals, who were directly involved in the trading activities. The measures also helped the Indian traders as well because most of the Indian traders directly sold their agricultural and non-agricultural products to the foreign merchants.

The geographical location of Agra helped itself to control all the trade routes during medieval period. It acted like a central position in all kinds of import and export of the goods.¹⁵ Some of the Persian writers of that period say “Agra to be the emporium of the traffic of the world.”¹⁶ Most of the imported goods were coming from Lahore, Surat, Burhanpur, and Ahmadabad. Some of the imported goods were like broadcloth from Lahore.¹⁷ From Surat and Burhanpur it got raw cotton, printed cloth and redsalu from Bengal.¹⁸ Agra got rich silken goods,¹⁹ quality carpets,²⁰ and medium varieties of cotton goods and other luxury goods from Ahmadabad. Indian merchants were supplied spices through Deccan.²¹ Perfume, cotton fabrics, silken goods, raw silk, aloe wood, bamboos, elephants, timber, all came from Bengal.²² Agra also exported some of the products which were produced within the city or its large hinterland areas. Goods made from cotton including carpets, indigo, sugar, and saltpetre were the important exported goods. Apart from that sizable quantities of cotton goods, sugar and indigo were collected from different part of the provinces i.e. Samana and Sirhind in the west, and Lucknow, Khairabad and Banaras in the east.²³ These kinds of products not only attracted the local traders, but attracted the English and Dutch traders also. Cotton fabrics, sugar, indigo,²⁴ and other goods were the main goods of export, which attracted the foreign merchants from different parts of the world. Agra produced materials like textiles, cottons, silk stuffs, and very fine cloth of gold and silver used for turbans.²⁵ Large amount of white sugar was produced in Agra and its surrounding areas.

Both Banaras and Patna also produced both agricultural product and cash crops during medieval period. Ganges which was navigable throughout the year,²⁶ and some of the tributary rivers like Yamuna, helped both of the province to connect with other provinces. Secondly, their midway position between the capital cities and rich doab on the west, and the plentiful Bengal possessing a convenient sea outlet in the east, made them ideal centres of trade and commerce. Banaras was

directly connected with Patna through the riverine route and was also linked with Hugli, Calcutta, Dacca, and Satgaon.²⁷ Apart from these riverine routes, both Patna and Banaras were well connected with different land routes during this period. During Jahangir's time a road was built from Patna to Agra for the benefits of the travellers.²⁸ Delhi, Agra, Patna, and Banaras, were well connected to each other, which was helped the travellers to travel easily. The goods which were coming to Patna and Banaras were largely from Bengal. Patna imported the goods like- spices, chinese, silk, tin and jewels, through Portuguese merchant and exported the goods like, jaunpur carpets, amertees, khasa and some other silk through the Bengal ports.²⁹ Banaras imported the goods through the English merchants, i.e. cotton cloth, raw silk, copper, spices, coconuts, betel nut, brimstone, brass plates and iron boxes.³⁰ Goods such as opium, sugar, jaggery, saltpetre, shell lac, lime cotton, iron, indigo, and chuttyas were being exported.³¹ These products were not only being produced in Banaras but were also collected from its neighboring areas. For example Oudh provided saltpetre. Patna exported saltpetre, opium, sugar, jaggery, shell lac, wax, iron, soap, oil, gunny bag, tinal, tobacco, chunam(lime), hides, cow tails, chuttyas(shoes) kusum flowers, black beads.³² Banaras was famous for manufacturing of finest cotton cloths too. Abul Fazl mentions different types of cotton goods which were produced in Banaras i.e. jholi, mihrkul.³³ Both cotton cloth and silk produced by using gold, silver and silk threads were famous in Banaras.³⁴ In addition to that we also find some of the manufacturing industries of copper utensils, sugar, opium, boat building etc, which have been mentioned by Pelsaert. Abul Fazl mentions about paper industry in Patna.³⁵ Gilded glass by the indigenous authority, sugar making, saltpetre³⁶ and opium making were also found in Patna.³⁷

The main bazar during medieval period was commonly known as "chawk," which was situated in the centre and was one of the prominent areas of those particular provinces. Alaudin Khalji had introduced the new market policy wherein he fixed the cost of all commodities from food grains, sugar and cooking oil to needle, and from costly imported cloth to horses, cattle, and slave boys and girls.³⁸ Malik Kabul Ulugh Khan was appointed as a controller of the market.³⁹ He set up three markets at Delhi, one market for food grains, the second for costly cloth, and the third for horses, slaves and cattle.⁴⁰ Some of the famous bazars of medieval period were chandani chowk, and chawk of saadullah khan in Delhi, and chawks of Agra and Lahore.⁴¹

Sanjay Subodh in his article “*Agricultural Method and Environment in Mughal India: A Study of Manuring System*” argues that despite of having the knowledge of using new technology, the Mughal rulers did not force the peasants to use the artificial methods of manuring. Rather peasants were used the natural manures in the agricultural production, because they did not want to harm the natural fertility of the soil. Second, according to him, the probable reason for not using the artificial manure was the consciousness towards the maintenance of ecological balance for the coming generations, and production in consonance with nature.

In the conclusion I would like to say that, there is no iota of doubt that Indian peasants followed more or less same methods of agricultural production over a period of time. However it is also found that our peasants were not hesitate to adopt new tools and technique in the field of agricultural production.

¹Deepak Kumar, Science in Agriculture: A Study in Victorian India, *Asian Agri-History*, Vol. I, No.2, 1997, p, 81.

²Abul Fazl, *Ain-i-Akbari Vol II*, Eng.Tr. by Col.H.S. Jarrett, Calcutta, 1891, p 86.

³Irfan Habib *The Agrarian System of Mughal India 1556-1707* p. 24

⁴Muhammad bin Daud Shadiabadi, *Miftahu-l-Fazala*, p. 145a.

⁵Hameeda Khatoon Naqvi, *Urban Centres And Industries In Upper India: 1556-1803*, Bombay, 1928, p.4. Hence forth cited as Naqvi, *Urban Centre*.

⁶AbulFazl, *Ain-i-Akbari Vol II*, p. 278.

⁷AbulFazl, *Ain-i-Akbari Vol II*, p. 278.

⁸SurendranathSen, *Indian Travels ofThevenot And Careri*, New Delhi, 1949, p. 68.

⁹Naqvi, *Urban Centre*, p. 94.

¹⁰AbulFazl, *Ain-i-Akbari Vol II*, p. 158.

¹¹A.JanQaisar, ‘Agricultural Technology Depicted in Mughal Paintings,’ *Itinerario*, Volume 16, Issue 02, July 1992, pp. 69-73.

¹²Naqvi, *Urban Centre*, p. 30.

¹³FatherMonserrate, *The Commentary of Father Monserrate*, Eng. Tr. by J.S.Hoyland, Bombay, 1922,p. 159.

¹⁴Jahangir, *Tuzuk-i-Jahangiri*, Eng. Tr. by Henry Beveridge, London, 1909, p. 47.

¹⁵The Remonstrantie of Francisco Pelsaert, *Jahangir's India*, Eng. Tr. by W.H. Moreland, London, 1925, p. 6. He writes that "all the goods must pass through this way, as from Gujarat, Tatta (or Sind), from Kabul, Kandahar or Multan, to the Deccan and from Deccan or Burhanpur to those places or to Lahore. There are no Practicable alternative routes and roads carry indescribable quantities of merchandise".

¹⁶AbulFazl, *Ain-i-Akbari Vol II*, p. 180.

¹⁷Naqvi, *Urban Centre*, p. 50.

¹⁸W.H.Moreland, *Jahangir's India*, p. 9.

¹⁹AbulFazl, *Ain-i-Akbari Vol I*, p. 93. Also see W.H.Moreland's, *India At The Death of Akbar: An Economic Study*, London, 1920, pp. 172-173. Henceforth cited as W.H.Moreland, *IndiaAt The Death of Akbar*.

²⁰*Ibid*, p. 55.

²¹R.C. Temple, *Travels of Peter Mundy in Europe and Asia: 1608-1667, Vol II*, London, 1914, p. 140. Also see W.H. Moreland, *Jahangir's India*, p. 22.

²²W.H.Moreland, *Jahangir's India*, p. 4.

²³Naqvi, *Urban Centre*, p. 53.

²⁴W.H.Moreland, *Jahangir's India*, p. 13. Also see De LaetJoannes, *De ImperioMagni Mogolis*, Eng. Tr.by J.S. Hoyland in, *The Empire of the Great Moghul*, Bombay, 1928, pp. 45-46. Also see William Finch, *Cf.Early Travels in India: 1583-1619*, Ed. by William Foster, London, 1921, p. 179.

²⁵William Irvine, *Later Mughals Vol I, 1707-1720* Ed. by Jadunath Sarkar, Calcutta, 1909, p. 424.

²⁶W.H.Moreland,*Jahangir'sIndia*, p. 167.

²⁷J. Horton Ryley, *Cf. Ralph Fitch: England's Pioneer to India AndBurma*, London, 1899. pp. 110-115

²⁸Thomas Bowrey, *Country Round the Bay of Bengal: 1669 to 1679*, London, 1895, p. 225.

²⁹Naqvi, *Urban Centre*, p. 100.

³⁰*Ibid*,p. 112.

³¹*Ibid*, p. 119.

³²*Ibid*,p. 114.

³³AbulFazl, *Ain-i-Akbari Vol II*, p. 158.

³⁴V. Ball, *Travels in India by Jean Baptiste Tavernier Vol I*, New York, 1889. p. 118.

³⁵Naqvi, *Urban Centre*, p. 164.

³⁶William Foster, *The English Factories in India: 1646-1650*, London, 1914, p. 332. Hence forth cited as William Foster, *English Factories in India, 1646-50*.

³⁷Naqvi, *Urban Centre*, p. 164.

³⁸Zia ud din Barani, *Tarikh-i-Firuz Shai*, Eng. Tr.by Elliot &J. Dowson, *The History of India As Told By Its Own Historians, The Muhammadan Period, Vol III*, Delhi, 1867, p. 196.

³⁹*Ibid*,p. 193.

⁴⁰*Ibid*, p. 196.

⁴¹Naqvi, *Urban Centre*, p. 76.