

CULTIVATION UNDER THE SULTANS OF DELHI c. 1206-1555

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In the land-locked Indus and upper Gangetic plain, lay the heartland of the imperial territory of the Sultans of Delhi (1206-1555), where then as ever, agriculture was the paramount productive activity. While there is a general consensus over the issue, strangely enough in our times no attempt has so far been made to study and reconstruct the state of medieval agriculture as a rural productive process. In the modern works of W. H. Moreland, I. H. Qureshi and Irfan Habib entitled *The Agrarian System of Moslem India*, *Administration of the Sultans of Delhi* and *Agrarian System of Mughal India 1556-1707*, respectively, on the agrarian system, as it obtained during the 1206-1707 span, agronomy has been completely overlooked. These authorities have concerned themselves merely with the assessment, demand and realisation of revenue by the State functionaries. This exclusive emphasis on revenue system has misled scholars and students alike to equate it with cultivation as such, indeed to the extent of altogether ignoring the fundamental dimension of tilling the farms and fields, carried on in millions of medieval Indian rural¹ and semi-rural habitations. Our purpose here therefore, is to focus the primary productive occupation of growing crops by the cultivators, denoted variously as *kishtwaran*,² *muzara*³ or *zamindar*,⁴ in the contemporary literature. The cultivator started on his work before setting in of the monsoon and was kept busy for the following ten months.

The immigrant Sultans looking upon agriculture as primary source of wealth, had likened cultivation as the pillar upon which the entire upper hierarchy of wielders of pen and sword, traffickers in trade and crafts rested for their (very faith and) sustenance.⁵ The agricultural prosperity of our area in c. 1200 was of such high order, that it may be assumed that notwithstanding their political weakness, the Hindu chieftains had placed no curbs on its progress. Muslim Sultans thus unable to contribute substantially any further in regard to the crops sown or the manner in which they were sown or harvested, had shrewdly envisaged a policy aiming at the extension of land under cultivation, multiplication and improvement in the cropping pattern, ⁶though undoubtedly under the political impulse of providing a firm economic base for their vast empire.⁷ Agricultural prosperity would naturally account for the emergence of a dynamic set of cultivators, on the one hand; with its chain effect it could act as a catalytic agent to push forward the economy in general, on the other.

Once introduced, the implementation of the scheme in the medieval Indian context was relatively a simple matter, as the country's geophysical attributes were eminently

helpful. The bulk of the imperial dominion consisted of level terrain of alluvial soil,⁸ with certain exceptions, such as the craggy Siwalik hills due north-westwards,⁹ or the scattered and broken Aravelli outliers in the south-west of Delhi.¹⁰ In the Gangetic plain, the rainfall is generally adequate, though in the southern portions it decreases to an annual average of 12-17-25" only.¹¹ The Indus basin consisting again, of an enormous mass of alluvium, deposited by the river Sindh and its tributaries,¹² is however drier. Hence the monsoon waters had to be frequently supplemented by an artificial irrigation system in order to ensure satisfactory cultivation.¹³ The entire area has the sharply divided seasons of the tropics, viz. extreme winter with a mean ranging from 55° to 64° F., summer, 90° to 115° F. or more,¹⁴ and the rainy season.¹⁵ The Hindu physicians had, however, reckoned six seasons of two months each to the year. These were named as *sassar*, *basant*, *karikhana*, *barkha*, *sharad* and *howant*.¹⁶ In the areas of inadequate rainfall, such as the Mewat region, attempts were constantly made to provide artificial means of irrigation. These could be channels, canals,¹⁷ subterranean canals—*kakrez* in the original,¹⁸ wells,¹⁹ both ordinary and with Persian wheel attachments, *do-lab* in Persian,²⁰ strong and very substantial bunds,²¹ tanks and masonry reservoirs,²² sometimes running into miles.²³ Some of these reservoirs were built near the spring sources.²⁴ Indeed, a glance through *Babarnama* well demonstrates the systematic manner with which the Agra—Gwalior tract was spotted with artificial water storage devices of one form or the other. Thus, both in the monsoon fed and the artificially irrigated areas, where auxiliary factors were not wanting, two crops, *kharif* / monsoon²⁵ and *rabi* / winter²⁶ crops were harvested, while in some others, such as the drought resistant *doabah*, a third *zayad* or additional crop of short duration was also sown.²⁷ Indeed, the climatic suitability of the region to vegetation was of a level that even in areas moving away from the cultivator's *arazi*, pastures for livestock, forests of perennial trees like sar,²⁸ karyal²⁹ or ebony³⁰ or even of bamboo,³¹ wild growth of useful shrubs and medicinal herbs,³² together with pockets of fruit orchards,³³ dominated the medieval Indian expanse of the non-urban landscape.

Of the three summer months, while early April provided the unassuming cultivator³⁴ (*halia* in the local dialect)³⁵ with ample sunshine to ripen the standing crop; the scorching May and June allowed the field to somewhat recover its energy expended in feeding the two crops sown by rotation³⁶ in the course of the last ten months. It may be inferred that the process of recovery of the *arazi* was not marred when further subjected to the growing of the *zayad* crop. Finally, the cultivator had now the leisure to assess the behaviour pattern of each *arazi*, to review his own performance and plan and prepare the land for the sowing of crops for the next season, prior to the onset of the monsoon. For the purpose, he was required to plough and after a month to dig and break up the clodded soil³⁷ into smoothness³⁸ and turn over the moist earth, by means of a pair of shovels or spades joined together in a horizontal plank and drawn by a couple of men.³⁹ Regarding the plough our sources make no reference to eight, or twelve ox-driven plough, noticed for the later *Samhitā* era ending by about 800 B.C.⁴⁰ Perhaps these unwieldy and cumbrous ploughs had gone out of vogue much earlier. In order to clear the land of stones⁴¹ and weeds⁴² two or four metal-pronged projections

described as tongs, *phalia* in the vernacular⁴⁸, were used to collect them together, but in the case of thorny weeds sickle was considered more effective.⁴⁴ The *arazi* was then checked for the underground moisture in the soil.⁴⁵ Besides other methods followed, the grass growing on the spot was quite a useful yard-stick to adjudge the nature of the soil.⁴⁶ And *Dastur-ul-Afazil* recounts at least a dozen varieties of grasses.⁴⁷ Similarly,

Kitab-us-Saidna fit Tibb,⁴⁸ *Farhang-i-Qawas*,⁴⁹ *Majmu'-i-Ziyai*⁵⁰ and *Tibb-i-Sikandari*⁵¹ too mention some of these and additional varieties of grass. The land was classified in accordance with its descending degree of fertility, referred to by Haji Abdul Hamid Muharrir Ghaznavi,⁵² but set out more explicitly in *Sirat-i-Firoz Shahi*, as the land already under plough, soft and alluvial soil, land responsive to irrigation by small channels, elevated and mountainous land, low and swampy land and finally, arid and desert land.⁵³ Later on Abul Fazi classified them as *polaj*, *parauti*, *kachchhur* and *banjar* or *usar*,⁵⁴ that is, barren. The allocation of crops for particular *arazi* was presumably made with a view to its fertility potential, which in turn determined its pre-sowing treatment. For instance, the levelling and cleaning process for canes or wheat were elaborate and time-consuming requiring five rounds of ploughing, whereas for barley it was much simpler,⁵⁵ or as in the case of millet no prior treatment of the soil was needed.⁵⁶ Or again, for a thriving cotton crop, ancients maintained that the land had to be ploughed sixteen times, but eight times for raddish and only four times for paddy.⁵⁷

But prior to ploughing and levelling, it was necessary to fertilise the land, the benefits of which were known to the Indians, at least since about 1000 B.C., as it has been noticed by the Brahmans in their Vedas.⁵⁸ Pyramidal heaps, called *anbār* in the medieval Indian parlance,⁵⁹ were deposited at frequent intervals in the field. Droppings of cattle, buffaloes, goats, sheep and birds, ducks excepted,⁶⁰ made good fertiliser, but those of horses and camels were considered to possess much greater potency.⁶¹ Dried grass and straws too were added in the heap.⁶² Further, in order to prevent the breeding of woolly worms in its process of decomposition, ash of common wood fuel, an alkaline insecticide, was mixed in the manure heap.⁶³ The manure, after a few days, was scattered all over the *arazi*, which was then ploughed and levelled repeatedly in order to mix fully the manure with the soil. The land onwards was left unattended till the break of the monsoon.

Much of the quality and quantity of the yield of the crops depended upon the quality as well as the pre-sowing treatment of the seeds. For instance, yellowish pink coloured seeds of the wheat yielded a crop that was nutritive, large-sized and tasteful;⁶⁴ likewise, about a quarter times higher yield along with an added merit of being preserved intact for full three or four years⁶⁵ (if stored carefully). For the quick maturing of the crops, the immediate pre-sowing treatment of the seeds in the remote antiquity used to be an expensive, complicated and laborious procedure. The medieval agronomists too followed almost the same procedure, advocated the bean seeds to be moistened for twenty-four hours before the actual sowing, the gram seeds to be similarly moistened

but in lukewarm water, while the seeds of lentils and vetches were to be mixed with cowdung for faster growth and higher yield.⁶⁶ Likewise, about a quarter times higher yield could be obtained by dibbling skinned seeds through a perforated container,⁶⁷ or dibbler. This dibbler is a three-foot long hollow wooden, bamboo or metal rod with tapering knobs at the bottom and is now known as *veer* in the vernacular. The seeds were skillfully scattered in the holes previously made in the field at regular intervals by a man walking backwards and carrying the dibbler in each hand. Dibbling has been particularly advised for sowing the annual herbaceous cotton, where at times the seeds are to be subsequently covered with earth for additional warmth.⁶⁹

For the actual cultivation the tiller required simple equipment of a plough, a pair of bullocks and of course the land. The land could be an ancestral legacy,⁷⁰ acquired personally,⁷¹ or received on hire from the landlord—*kadiwar* or zamindar in the original,⁷² to cultivate for the season,⁷³ or as might be stipulated in the tenancy contract. Should the land be received by the cultivator for crop sharing,⁷⁴ it was useful for both the parties to be clear about the stipulated clauses regarding the crops to be sown,⁷⁵ the supply of the appropriate quality of seeds, bullocks, labour and the category of the fertility level of the piece of land in question.⁷⁶ Most advisable condition was to assign land and seed to one party, while the labour and bullocks were to be furnished by the other. In the event of demand for readjustment of the order, such as bullocks and seeds by one, and land and labour by the other, the situation required deeper probe in the bonafide of the parties.⁷⁷ The exact percentage of the post-harvest revenue demand to be shared by the parties too ought to be stated in clear categorical terms right from the outset. Generally, the practice was to measure the aggregate yield, divide equally the state revenue demand between the parties, as also divide the remainder of the harvest equally between the two partners of the deal.⁷⁸ The bullocks too could be owned,⁷⁹ hired⁸⁰ or purchased.⁸¹ In matters of sale and purchase of cattle, both for agricultural and dairy product purposes⁸² in the rural markets, selling at low rates was a common feature.⁸³ The plough was a horizontal beam structure, termed *takhi-i-isterash* in the Persian lexicon,⁸⁴ and *hal* in the local dialect. It had a metal pointed downward projection called ploughshare⁸⁵ which made deep line of furrows in the⁸⁶ ground as it was pulled along by the yoked⁸⁷ bullocks. The wood cum metal character of the plough made it imperative for every village society to incorporate carpenters and blacksmiths in its fold since the earliest days.

In order to promote flowering and fruiting, the ancients used to fertilise the plants a second time;⁸⁸ our sources, however, do not mention the practice. Crops were normally harvested with the aid of sickles,⁸⁹ hooks and scythes. After cutting, the stalks were tied in sheaves,⁹⁰ then laid out in the sun to dry. The perfectly dried crisp grain was threshed, sifted and winnowed⁹¹ through the winnowing basket.⁹² The cleaned grain was collected in heaps, again called *anbar*,⁹³ then carted to the granary—*kothi* in the vernacular.⁹⁴ Should the pounded bones of elephants be mixed with the grain no insect or pest could ever approach it.⁹⁵ Indeed, the same effect could be obtained by mixing with wheat grains, leaves of lettuce or pomegranate,⁹⁶

ash of oak wood⁹⁶ or by boiling the elephant's bones, sprinkling the boiled water on the grain, drying it in the sun and then storing it.⁹⁸ Certain incidents are related where stocks of wheat, rice or millet were preserved for long spells of time, stretching from twenty to hundred years.⁹⁹ In such cases deep pits-*khatta*¹⁰⁰—were dug whose inner walls were lined with dried grass, preferably the buk grass,¹⁰¹ floor was covered with sack cloth while the outer opening of the pit was sealed off with chaff, clay and cowdung plaster; it had to be maintained in good repair as the monsoon downpour tended to wash it away.¹⁰² While storing in the pit wheat was mixed with leaves of lettuce, pomegranate, ash of chestnut tree in the proportion of 100 to 1 maund.¹⁰³ In the case of barley, though common ash is useful, ash of laurel is more effective or else a jar of vinegar of dates, grapes or of the common Indian barley¹⁰⁴ tucked away inside the pit served the same purpose of keeping the barley grains in excellent condition for years.¹⁰⁵

Contemporary evidence attests to the production of the following principal crops in the Sultanat and these are cited below in a tabular form:

TABLE I

Principal Crops Grown in the Sultanat c. 1200-1550

Sl.	Crops	Remarks	Source
1.	Wheat	In pre c. 1200 India.	<i>Founders</i> , 161; <i>Mittre, IJHS</i> , V, No. 1, 1870, p. 154. <i>Watters*</i> , I, 179; Vol. II, p. 251. <i>E.K.</i> I, 173; <i>E.K.V.</i> , 65; <i>Barni</i> , 305, 498, 568; <i>Khair</i> , 241; <i>Masalik</i> , 33; <i>Rehla</i> , 19, 40; <i>Afif</i> , 125.
		Medicinal values.	<i>Tibb.</i> 31b-32a, 83b.
2.	Rice	Mentioned in prehistoric antiquity. Fine quality rice grown around Magadh Occurring in the Sultanat Produced in 21 varieties. Sown thrice a year Twelve varieties harvested in autumn, e.g. <i>Ratsal, Kalwa, Khirat, Kand, Bandri, Sikandhak, Koharpa, Daula, Lackbir</i> etc. <i>Shali</i> harvested in the season of <i>shardarat</i> in ten varieties. Two <i>rakashta</i> -wild varieties Grown around Multan	<i>Founders</i> , 57, 58, 163; <i>Mittre</i> , op. cit., p. 151. <i>Watters</i> , I, p. 179; op. cit., II, 86. <i>Saidna</i> , 19; <i>E.K.</i> I, 173; <i>E.K.V.</i> 66; <i>Barni</i> , 305; <i>Rehla</i> , 69, 90; <i>Ziyai</i> , 189b, 191a. <i>Masalik</i> , 33, 34. <i>Rehla</i> , 19. <i>Tibb.</i> 31a. <i>Tibb.</i> 31a. <i>Tibb.</i> 31a. <i>Masalik</i> , 33.

*On *Yuan Chwang's Travels in India*, 629-45, New Delhi, 1973.

TABLE I (Contd.)

Sl. No.	Crops	Remarks	Source
3.	<i>Jowari</i>	Occurring in the Sultanat	Mahru, 74; <i>Ziyai</i> , 190a-b.
4.	<i>Bajra</i> (millet)	Occurs in Vedic text Occurs in the Sultanat Abundant yield, diet of the poor Rich yield without ploughing.	<i>Founders</i> , 162. <i>E.K. V.</i> , 66; <i>Rehla</i> , 18, 26, <i>Rehla</i> , 18, 6. M. Levy, 46.
5.	Maize (<i>bhutta</i>)		<i>Ziyai</i> , 196a.
6.	Barley	For the Vedic period For the Sultanat era	<i>Founders</i> , 161. <i>E.K. V.</i> 65; Barai, 305, 498 <i>Masalik</i> , 33; <i>Rehla</i> , 19; <i>Ziyai</i> , 189a; <i>Tibb</i> , 31d, 83b.
7.	Gram	Grown in the Sultanat	<i>E.K. I.</i> , 173; <i>E.K. V.</i> 66; Barni, 305, 498, 568, 569; <i>Masalik</i> , 33, <i>Rehla</i> , 19; <i>Tibb</i> , 31a; <i>Ziyai</i> , 187b.
8.	Moth	Grown in the Sultanat	Barni, 305, 568; <i>Rehla</i> , 69; <i>Tibb</i> , 31a; <i>Ziyai</i> , 189b.
9.	Vetches	Grown all over	Watters, 1, 183, 199, 296, Vol. 11, 251. <i>E.K. I.</i> , 173; <i>E.K. V.</i> 65; Barni, 305; <i>Masalik</i> , 33; <i>Rehla</i> , 19; <i>Ziyai</i> , 189b, <i>Tibb</i> , 12b, 31a-b, 83b.
10.	<i>Mung</i>	Grown all over In the Sultanat Better to grow green Mung Eaten for breakfast when cooked with rice along with ghee	Watters, 1, 183, 199, 296, Vol. 11, p. 251. <i>E.K. V.</i> 65; <i>Madarul Afazil. I.</i> <i>V.</i> 250. <i>Tibb</i> , 31b; also <i>Ziyai</i> , 189b. <i>Rehla</i> , 19.
11.	Peas	In the varieties	<i>Ziyai</i> , 189b; <i>E.K. V.</i> p. 65.
12.	Lentils (<i>masur</i>)	In the Vedic texts Grown all over In the Sultanat For its botanical details	<i>Founders</i> , 162. Watters 1, 183, 199, 296, Vol. 11, p. 251. <i>Masalik</i> , 33, <i>Rehla</i> , 19; <i>Ziyai</i> , 189b; <i>Tibb</i> , 12b. Gerard, 1049-51.
13.	<i>Arhar</i>	Grown all over In the Sultanat	Watters, 1, 183, 199, 296, Vol. 11, 251. <i>Qawas</i> , 56; <i>Tibb</i> , 31a; <i>Madarul</i> <i>Afazil</i> , 1, 175.
14.	Oilseeds		
	(i) <i>Sarshaf</i> (<i>sarson</i>)	Used for extracting oil In two varieties, large and small, can grow even on less fertile land.	Watters, 1, p. 179; <i>Ziyai</i> , 189b. <i>Tibb</i> , 32b; 112b.

TABLE I (Contd.)

Sl. No.	Crops	Remarks	Source
(ii)	Kanjad-rape seed (sesamum indicum)	In the 5th century B.C. seed and oil exported to Greece Mentioned in the Vedic text For its occurrence in the Sultanat. Best oil is produced Used for lighting lamps Was retained in C. 1310. C. 3srs. per jital. Its flour is eaten. Its oil brightens hair & leather when applied.	Warnington, 206; also Auboyer, 85. <i>Founders</i> , 161, 170. Barni, 310, 568, 569; <i>Rehla</i> , 19; <i>Masalik</i> , 33; <i>Tibb</i> , 12b, <i>Ziyai</i> , 48a, 50b, 189b, etc. <i>Tibb</i> , 25b, also 125a. <i>E.K.</i> IV, 65-66; <i>Masalik</i> , 34. Berni, 310. <i>Madarul Afazil</i> , 1, 24. <i>Tibb</i> , 31b.
(iii)	Linseed	Used for extracting oil Oil good for the body but harmful to the eyes. Its flax (katan) woven into soft fine fabrics Medicinal property in seeds	<i>E.K.</i> 11.20; <i>Tibb</i> , 25a. <i>Tibb</i> , 25b. <i>Tibb</i> , 115a; <i>Madarul Afazil</i> , 1, 197. <i>Tibb</i> , 25a.
15.	Sugarcane	Its cultivation in c. 800-300 B.C. Grown in the country, sugarcane candy. Useful medicinal herb. Cane used for distilling arq-wine In two varieties— <i>paunda</i> for chewing, <i>ekh</i> for converting into sugar Grown around Awadh. Making of the <i>nabat</i> , <i>tari</i> and red varieties of sugar. Twelve varieties of canes— <i>pannola</i> , <i>bhatirak</i> , <i>nupsak</i> , <i>anchattar</i> , <i>raipalor</i> , <i>darkhapper</i> , <i>Kasiyarah</i> , <i>nikshara</i> , <i>tabsachabe</i> , <i>nailpura</i> , <i>kasanchab</i>	Mittre, op. cit., p. 152 for its export, Auboyer, 85. Watters, 1, p. 179. <i>Saidna</i> , 185, <i>Ziyai</i> , 120b, 121a, 124b, 189a. Watters, 1, p. 179; <i>E.K.</i> IV, 64; <i>Ziyai</i> , 171a. <i>E.K.</i> IV, p. 645; Barni, 310, 478, 568-69; Dhanpal, 13, 15; <i>Rehla</i> , 19, 28; Afif, 128; <i>Tibb</i> , 26b, 27b. <i>Khair</i> , 184; for Manikpur Kara, <i>Rehla</i> , 40. Barni, 310; also <i>Tibb</i> , 27a; <i>Ziyai</i> , <i>Ziyai</i> , 189a. <i>Tibb</i> , 27a.
16.	Cotton (herbaceous)	Occurs in the early Vedic texts. In the Sultanat. Grown around Multan Grown around Baroda. For its botanical details. Medicinal use of its flowers which are white.	Mittre, op. cit., p. 151. Dhanpal, 49, 66, 77, 19(G); <i>Qawas</i> , 56; <i>Dasturul-Afazil</i> , 206; <i>Rehla</i> , 155; <i>E.K.</i> V., 140. Mirkhurd, 166. Isami, 755. Gerard, 753-54. <i>Tibb</i> , for also <i>E.k.</i> 11, 38.
17.	Hemp	Mentioned in the Vedic texts 1. Its occurrence in the Sultanat Converted into very coarse fabrics for the poor	<i>Founders</i> , 163; Mittre, op. cit., 152. <i>Qawas</i> , 39; <i>E.K.</i> V, 48; Barni, 344. <i>E.K.V.</i> , 119; <i>Dasturul-Afazil</i> 112; Barni, 199, 344; also <i>Aqrab</i> , 13.

TABLE I—(Contd.)

Sl. No.	Crops	Remarks	Source
		Leaves used as an intoxicant.	<i>E.K. V. 48.</i>
		2. In the Sultanat used for making ropes.	<i>E.K. V. 48.</i>
18.	Indigo	Universally grown	<i>Saidna, 224; Tibb, 25b; also Naqvi, Colouring Agents, (in press), Table, II. no. II; A.A. II, pp. 78, 83, 86, 88.</i>

The Table bears out the fragmentary nature of data culled out from the sources at our disposal, where not even the region and the season of the crops have always been indicated. Viewing the Table, therefore as illustrative, it may be suggested to be focussing the the element of continuity between the era of the composition of the Vedic texts, i.e. c. 1000 B.C. at one end and Abul Fazl's exhaustive list of the crops grown around c. 1595, at the other.¹⁰⁶ Further, the listed items exhibit a firm indigenous character, so much so that herbaceous cotton,¹⁰⁷ indigo¹⁰⁸ and sugarcane¹⁰⁹ came to be identified with India for their origin. Opium and a nonregular crop of *tarmas baqli*,¹¹⁰ the Egyptian beans¹¹¹ or the Shami beans¹¹² are, however, two exceptions whose introduction might be attributed to the Muslim era,¹¹³ though at some unknown date and place of the country. Beans were of course cultivated in the country right from the beginning, say from c. 1000 B.C.¹¹⁴ the Hindu physicians had, however, discouraged its use for dietary purposes and regarded it as unwholesome.¹¹⁵ *Tarmas baqli*, therefore, might have served as a welcome substitute. *Baqlis* (beans), whether Indian or Egyptian, were in any case, mere vegetables of little value,¹¹⁶ hence these have not been included in the list of crops enumerated in the Table.

Poppy cultivation is, however, a different matter. Whatever its date of introduction, it caught on in the country and began to be extensively cultivated. The pre c. 1200 sources¹¹⁷ do not refer to opium for any of its known uses: as restorative,¹¹⁸ intoxicant,¹¹⁹ anaesthetic¹²⁰ or lethal—in the Indian environment. For instance, the seventh century Chinese traveller Huan Tsang or *Al-Beruni* (d. 1036 A.D.), notwithstanding a rather long note on *afiyun* (opium), in his materia medica *Kitab-ul-Saidna fi al Tibb*, do not notice its cultivation in the country. Indeed, the nearest term to *afiyun* (Arabic) cited in the Sanskrit lexicon is *ahi-phena*, purporting to be a venomous saliva of the snake.¹²¹ The authorities of the sultanat period, such as Amir Khusru,¹²² Zia-uddin Barni,¹²³ Zia Muhammad Ghaznavi,¹²⁴ or Hajib Khairat Dehlavi,¹²⁵ on the other hand, unquestioningly assume and accept *koknar*, opium, as one of the regular crops of India. Thus, the inference that poppy cultivation was introduced in the country at some as yet unspecified date between 1036 and 1206, seems unavoidable. Also, it may be suggested that the place of its initial cultivation in India

was a quiet point, away from the hub of political gravity, say Malwa, where it could have reached unnoticed via the coastal route. Incidentally, *afiyun* is a Rumi (Turkish) word,¹²⁶ is indigenous to Anatolia.¹²⁷ It was grown there in several varieties out of which the white *khashkhash* was the best,¹²⁸ and was largely used in the Arab world since c. 800 A.D.,¹²⁹ as a narcotic, soporific and pain-killer.¹³⁰ Its vital anaesthetic property, however, was first discovered and prescribed in surgery by Bu Ali Sienna (d. 1037) in his celebrated treatise the *Al-Qanun*.¹³¹ In its second volume Avicenna has suggested a prescription to make a patient unconscious for a painful surgery, consisting of opium along with other ingredients such as nutmeg, crude aloe wood, wine and so on.¹³² He was followed in western Spain by the noted surgeon Abul Qasim Zahrawi 1013-1106, considered as the father of modern surgery.¹³³ It would be interesting to ascertain its very first use as an anaesthetic agent in medieval India where medical science was otherwise so well advanced.¹³⁵

The other important cash crop noticed in the Table is indigo, *Indigofera tinctoria*. It was a small plant not above a yard high with hard branches, small leaves and white flowers.¹³⁵ It flourished in areas of brackish water and dense soil. It is sown once in three years and it is in the second year that the plant yields the best dye contained in its leaves.¹³⁶ This delicate dye-yielding plant required constant care and skilful handling,¹³⁷ to obtain a substantial yield of the blue dye. In our Table only Sarkhej indigo has been noticed, although according to later authorities it was much inferior to that grown around Biana,¹³⁸ or other pockets of production in the upcountry.¹³⁹ Moreover, in the millineum before Christ, its production is traced back to Thatta in Sind and in Multan and Punjab in the subsequent centuries.

Of cotton, there were two varieties: sembhal (*Gossypium arboresum*), a perennial tree of wild growth,¹⁴⁰ yielding cotton suitable for wadding and quilting of beddings,¹⁴² or winter wearing apparels.¹⁴² The other is the herbaceous cotton (*Gossypium herbaceum*), a seasonal crop that yielded cotton capable of being woven into fabrics. Its seeds after sowing grow into shrubs producing first whitish blossoms,¹⁴³ then small pods containing a moist yellowish substance. As this substance ripens into snowy dry cotton the rind of the pod bursts open yielding the usable raw cotton.¹⁴⁴ Once sown the shrub bears for three years running.¹⁴⁵

Finally, the Table as it stands, manifests that the level of agricultural development had achieved the peak. The Sultans, therefore, as stated before introduced a fresh dynamism in the sector by aiming at extension of area under cultivation and augmenting the production meant for the market, instead of the traditional system of cultivation for the local consumption. This could be easily achieved in the obtaining milieu by stimulating the production of cash crops. To illustrate the point, the generally diffused cultivation of herbaceous cotton, in the medieval context, was a rare economic asset enjoyed by the country. It accounted for the diversification of the crops on the one hand and on the other, it generated a much wider spread of weaving craft in order to meet the second essential requirement of clothing the

tropical mankind. And unlike the perishable foodgrains, the woven fabrics possessed the merit of withstanding the distance in time and space, so that whatever its volume of surplus, it could always be profitably employed. Again, the progress in weaving craft stimulated the auxiliary crafts of dyeing, printing and painting correspondingly.¹⁴⁶ These taken together resulted in augmenting the employment potential of the realm. Thus, our authorities quite often expressed a sense of satisfaction at the rate of growth in crafts-*kasab kari*.¹⁴⁷ Furthermore, in the absence of occurrence of precious metals in any appreciable quantity in the country, the finished woven cloth constituting the leading item in the export consignment, enabled the sultanat to earn foreign exchange as the proceeds of its sales in the markets abroad.¹⁴⁸ It may be noted here that in the premodern India, the imported treasure was almost the only source for acquiring the precious metals, to be converted into currency for circulation as exchange medium. Whenever this particular source dried up, the affected region was constrained to virtually revert to the pre-money mode of economy. Thus, the incoming treasure minted into local currency turned out to be the life-blood for keeping the imperial market running at the money exchange level. And as soon as this cotton-cotton cloth-money process was jeopardised by the displacement of any cog in the wheel, the economic balance was lost, as happened in the 1388-1540 span.¹⁴⁹

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