Chapter-IV

AGRICULTURE AND LAND MANAGEMENT
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Agriculture and Land Management

Agriculture was the main occupation of the people under the Satavahanas and their successors in the region under survey, as in India at all times. It is to illustrate from this study firstly the factors that influenced land grants made during the period under survey and the reactions of the agrarian community to such grants, and to the terms and conditions of the land holdings. The term “agrarian” is used in its wider sense that is relating to land, especially cultivated land, its management and distribution. It is not used, here, in the more restrictive sense of “relating to tenancy” which it has come to acquire in popular usage. Before proceeding to examine and analyze the impact of land grants on agronomy, it is not out of context to examine the importance of the land and its management. Land defines the economics of utilization of natural resources and thus is much more than the mere terra firma. It includes all the materials and forces which nature gives freely for man’s use in land and water, in air and light and heat

Land is defined as a Primary input and factor of production which is not consumed but without which no production is possible. It is the resource that has no cost of production and, although its usage can be switched from a less to more profitable one, its supply cannot be increased. The term 'land' includes all physical elements in the wealth of a nation bestowed by nature; such as climate, environment, fields, forests, minerals, mountains, lakes, streams, seas, and animals. As an asset, it includes anything (1) on the ground (such as buildings, crops, fences, trees, water), (2) above the ground (air and space rights), and (3) under
the ground (mineral rights), down to the center of the Earth. Perhaps the oldest form of collateral, land is still very attractive to lenders because it cannot be destroyed, moved, stolen, or wasted. All a lender needs is the borrower's clear title to it.¹

Land management is defined as the process of managing the use, preserve and development (in both urban and rural settings) of land resources. Land resources are used for a variety of purposes, which may include organic agriculture, reforestation and water resource management.²

**Land and its classification:**

According to Arthasastra of Kautilya that the country (Desa) between the Himalayas and the ocean had a variety of landscapes such as forests, villages, mountains, level plain, and uneven grounds, where works conducive to power and prosperity of the state could be undertaken. Thus the following types of land are met with in our sources. They a) site for houses, b) fertile, c) watery or wet, d) plains, e) marginal furrows, f) low grounds, g) marshy, h) land beaten by foam of river water, i) land frequently over flown by water, j) land in the vicinity of wells, k) land watered by regular rains, l) salty, fallow, barren and uncultivated tracts, m) forest, n) miry, o) rocky, p) uneven, q) desert, r) depressions in the ground and land full of pebbles, s) deep ditches, t) elevated or high-table land, u) grazing grounds, gardens and groves and v) mines and quarries.³

Frequent references to kshetra, khetta or khettiya, occur in the inscriptions and the literary sources of the period under consideration. The term ordinarily means an arable field or tilled land. Epigraphic records⁴ both royal and private explicitly
mention the donations of fields (khetta) for the maintenance of the Buddhist monks and ascetics residing in the nearby monasteries and caves. Thus kshetra or khetta was a fertile land. It included vast plains, watery or wet land (kedara), land on the bank or river, enjoying sufficient moisture, land frequently over-flown by water, land in the vicinity of wells, land watered by regular rains, marginal furrows between two rows of crops, low lands, and marshy places. Cultivation was done according to the fitness of land for all units of land were not of the same fertility.

Arable land (kshetra) was preferred to all other types of land, for the very existence of people depended on it. Kautilya holds that a limited tract with water is better than mere plain; the former being more conducive to the crops and fruits throughout the year. While describing the attributes of a good country, the same authority gives importance to fertile lands. Thus kshetra was a fertile land producing all kinds of agricultural products. Akrishta, ushara, anurvara, bhauma and khila were the terms used for uncultivated, barren, fallow, dry and salty types of land. It is curious to note that Megasthenes does not specifically refer to any such tracts, which however were quite common, in our period. They were reclaimed for cultivation, laying out irrigation measures, gardens and buildings for shelter. According to Milandpanha the bad character of the fallow land could be known, if there was no sprouting up of the seed. In Bhasa’s drama Pancaratram, Sakuni warns Duryodhana that ‘yet corn will grow in the salty soil, if Yudhisthira be king’ A later authority Narada smruti explains that tract of land not under cultivation for one year is called ardhakhila (half waste), and that which has not been tilled for the last three years is termed as khila. Thus it was a type of land not under plough at certain period and may better be taken as cultivable waste. The interpretation of the vedic term khilya
which is probably the same as khila, as “strips of land between the cultivated plots probably used by the owners of plots in common”\textsuperscript{23} is a hasty inference.

Another type of land is called the forest or jungle land i.e. vana, vanapoara, and aranya.\textsuperscript{24} The Arthasastra mentions such uncultivable tracts under the title of bumichdravidhanam.\textsuperscript{25} They were used as grazing grounds,\textsuperscript{26} hermitages of the brahmanas, royal forests for the King’s sports, game forests for the people in the extremity of the country, reserved timber and elephant forest (dravyahastivana).\textsuperscript{27} Our sources\textsuperscript{28} give numerous references to the reclamation of forest or jungle lands and thus making them fit for cultivation and habitation. It may therefore show that bhumichhidra though apparently conveying the sense of a land having holes was not entirely uncultivable waste.\textsuperscript{29} Other types of land such as rocky,\textsuperscript{30} miry,\textsuperscript{31} uneven,\textsuperscript{32} desert,\textsuperscript{33} having depressions\textsuperscript{34} and full of pebbles\textsuperscript{35} were not fit for cultivation. However, the Arthasastra states that a good country should be free from all such types of lands\textsuperscript{36} which is not possible, hence the element of land management forms the policy in agronomy.

The terms sthala and parvata occur in the Arthasastra for uplands or high grounds.\textsuperscript{37} Building of bricks and mud were generally made on elevated spots to safeguard against floods.\textsuperscript{38} The Ramayana too refers to the high grounds and land with deep ditches.\textsuperscript{39} The Sattigumba Jataka mentions a high table land in the heart of a forest, where silk cotton trees were grown.\textsuperscript{40} Thus sthala consisted of both the cultivable and habitable lands. In the outskirts of the village, there was a meadow or grazing ground i.e. gochara, or gavyah\textsuperscript{41} for grazing of cattle.\textsuperscript{42} Besides, uncultivable lands and forests served as pasture lands.\textsuperscript{43} The Arthasastra indicates that great
importance was attached to pasture land, where the cowherds tended the cattle of the village folk. The term vraja-bhumi or vraja-bhumika referred to in the Rock Edict of Asoka has been taken by Buhler as “an outpost for city or village and a cow pen developed into a ranche and hence into a village”. Thus, right from the early period in the history of mankind the importance of the land and its qualities and utilities were identified for its better utilization, consequently mankind developed techniques of land management.

**Land Survey:**

With a view to safeguard the interests of the landowners against frequent anomalies and to maintain the royal treasury by accurate land assessment and collection, the land survey was considered an essential unit of the state policy. Careful measurement of arable land (kshetra) was known even in the earlier period. But the minute and detailed survey and measurement of all types of land such as cultivated, uncultivated, wet, fruit gardens, forests and pasture lands which Arthasastra introduces to us for the first time, was probably not made prior to our period. Thus, such detailed system of survey and measurement must have also furnished the state an adequate data of productive capacity of the people. The early law giver, Apastamba frequently refers to the boundaries of the villages. Such boundaries and locations were denoted both by natural and artificial marks. Kautilya and Manu lay down that the village boundary should be indicated by a river, mountain raised mound, forest, cave, artificial buildings (setubandha) namely, tanks, wells, cisterns, temples, fountains and bulbous plants, trees having long life such salamali, Palmyra, silk cotton tree and milky tree and different kinds of bamboos.
Manu states that the boundaries should be denoted by some hidden marks, which Medhatiti, the commentator explains as dry cow dung at the time of the formation of new villages. Besides numerous references to partition of property suggest the division and demarcation of the fields amongst the lawful heirs. Thus the marks like stone, pillars, fences of sticks and branches, pegs and water channels were setup around the plots of land which distinguished the land held by the different owners. Such marks which are used even in the modern times must have facilitated the survey work in ancient India. The boundaries were held very sacred and any violation to them was severely dealt with. The early law giver Kautilya fixes a fine of 24 panas for destruction of the boundaries. But Manu is more rigorous in enacting that such destruction should be punished by mutilation. We further learn from the Vishnu Smruti that anyone destroying the land marks should be compelled to pay the highest amercement and asked to mark the boundary again with the land marks. Yajnavalkya lay down suitable penalty for any act of transgressing and removal of the boundary lines.

The Arthasastra tells that the total area of the village was ascertained by means of inspection of the village accounts and records, which were maintained by the gopas and Sthanikas with separate entries of produce of different types of land after complete verification of the boundaries of the lands. Besides, survey was undertaken by the state officials like the Rajakamika and Rajjuka or Rajjugahaka Amachcha. Thus great care was taken by the state surveyors to survey the lands accurately, so as to avoid any kind of loss to the treasury or to the peasant. Sometimes resurvey of land was also done when the floods washed away the boundary marks. Strabo observes that the rivers were improved and the land was premeasured like in
Egypt.\textsuperscript{66} Thus elaborate and detailed system of survey and resurvey shows that there was hardly any scope for leaving any piece of land unrecorded for fiscal purposes, which was a major factor of land management.

**Land Measurement:**

A detailed table of linear measures of different varieties in the Arthasastra as well as some scattered references in the other sources shows that such units of measures were used both by the state and the people. The royal surveyors made use of the measures for accurate measurement of land. The Arthasastra\textsuperscript{67} mentions units of measures such as the Dhanurgraha and the Dhanurmushti, which were equal to four angulas (i.e. 3 inches) and eight angulas (i.e. 6 inches) respectively. The popular known measure was the Hasta. It was not always the distance from the tip of the elbow to the middle finger. The Prajapatya hasta or the synonymous aratni\textsuperscript{68} was equal to 24 angulas in breadth\textsuperscript{69} or a cubit of the length from the elbow to the tip of the middle finger and probably may have been used for measuring arable lands i.e. kshetra and other irrigation works of importance.\textsuperscript{70} The next measure more freely used for the measurement of land was the Danda (rod). The Arthasastra states its length as Aratnis or 96 angulas.\textsuperscript{71} Buhler also suggests the same length.\textsuperscript{72} the Danda used for measuring the lands granted to the brahmanas was of 192 angulas.\textsuperscript{73} Elsewhere, it has been shown that survey and measurement of land was done with the rope i.e. rajju\textsuperscript{74} It would suggest some standard length of measurement. According to the Arthasastra, its length was equal to 10 Dandas, each Danda having a length of four artanis or 96 angulas.\textsuperscript{75} It is suggested, therefore, that the rope used for cadastral survey was equivalent to modern 20 yards and was convenient for all purposes. Our epigraphic\textsuperscript{76}
records and literary sources mention a measure called Nivartana. Bodhayana lays down that ‘he cultivates six Nivartanas of fallow land and gives a share to the owner…..’ The Arthasastra state that Nivartna was a square measure. It further explains explicitly that the Nivartana was equal to 3 Rajjus. According to Pran Nath, the Brahmadeya Nivartana was an area of land granted to a Brahmana and equal to an English acre. Altekar takes its area as 5 acres of land. S.K. Das vaguely says that it was equal to an area sufficient to support one man from its produce. R.S. Sharma says that it was 1½ acres. But none of them give sufficient reasons for their conclusion. However from the Arthasastra’s explanation it can be said that the Nivartana would be a length of 60 yards. However, because it was a square measure as stated above, its area would come to 60 x 60=3,600 square yards and was less than an acre. According to D.C. Sircar, one Nivartana of land 240 x 240 square cubits (2.975 acres) or 120 x120 square cubits (0.743 acres) His latter calculation is more in conformity with our results.

Another measurement Hala also frequently referred to in the epigraphs. The term Hala would literally mean that extent of land which can be cultivated by a pair of oxen, i.e., one plough. W.W. Hunter observes that “the cattle are so poor that one pair of oxen cannot possibly work more than 6 acres”. Thus according to him, one plough or Hala will be equivalent to 5 or 6 acres of land, which can maintain a family in complete comfort. It is argued that the modern conditions of cattle rearing, which the writer has in view, cannot be fairly applied to ancient times, when animal husbandry was more or less a profession of the people and the cattle were generally healthy. Moreover, the cultivation also depended on the size and weight of the plough as well as the quality of the soil in different parts of the country. A pair of oxen can
plough even more than 5 or 6 acres of land, if the soil presents congenial conditions and thereby involves less labour. We may therefore, suggest that Hala might have varied from 5 to 8 acres of land and the higher figure of 8 acres, though conjectural, down to seem to be very improbable.

The above study attests that a large variety of measures was used in different times of ancient and medieval period. The state may have some standard measures, which were used by both the royal officials and the people. Such measures were manufactured in the state manufactory and were stamped with the royal seal. According to Strabo, the fourth group of the city Magistrates looked after measures of all kinds. Manu also lays down that the measures should be duly marked and re-examined at least twice a year. Our ancient jurists prescribe punishment for counterfeiting or forging standards of measure and passing them off as genuine. Nevertheless, the possibility of local measures used by the people cannot be ruled out in the region under the study.

**Question of ownership of Land:**

A mass of literature has accumulated and the scholars as to the different types of ownership of land prevalent in ancient times such as communal, individual and state owned have put theories forward. The following analysis will show that all the three systems with certain variations as to their applicability prevailed in the period under review. It is true in the pre-historic period that the people who by using metal implements reclaimed forest lands and settled in groups as agriculturists might have enjoyed the absolute ownership on the lands which they brought under the plough, the
rest of the whole countryside remaining unclaimed. Thus it is clear that land and its utilization was practiced from times immemorial in the human history.

There was no body at that time to demand any form of tax from them. With the advent of the gradual monarchical type of administration, the entire land in the kingdom including forests, waste lands, arable lands, hillocks, rivers and mines was taken over by its ruler and it was the so called rashtra or rajya which formed one of the seven limbs (i.e. angas),\(^9^1\) say the basic factor required for one to become a king. One could not be called a ruler without a rajya. The Hindu scriptures pronounce that the State or the king possesses the absolute ownership over the entire land in the kingdom\(^9^2\) and is endowed with the authority of levying taxes on the cultivated lands. The cultivator is a tenant of the land and he has to pay all the taxes including the primary rent, although he can enjoy certain privileges over the land. According to Strabo “The whole country is of royal ownership and the farmers cultivate if for a rental in addition to paying a fourth part of the produce”.\(^9^3\) However it is curious that Arrian, who also largely draws from the Indica of Megasthenes, says nothing about the ownership that the cultivators used to pay tribute to the King.\(^9^4\) According to Rostovtzeff, the Greek writers in India had the Hellenistic eyes who thought that in India as elsewhere, the cultivators being his tenants.\(^9^5\)

Bhattasvamin, the commentator on the Arthasastra quotes a verse i.e., “those who are well versed in the Sastras admit that the King is the owner of both land and water, and that the people can exercise their right of ownership over all other things except these two.”\(^9^6\) This should not lead us to the conclusion that there was royal ownership of ‘all’ the land. Kautilya\(^9^7\) lays down different water rates to be paid by
the cultivators of the use of the state owned irrigation works and Bhattasvamin’s verse only indicates such levy. Secondly, the Arthasastra clearly states that the king’s right of ownership (swamyam) lay in reservoirs or lakes (setushu) the law givers and the authors of the Epics also give us a vague idea of ownership of land by the state. According to Gautama, the King is the master of all except the brahmanas Manu lays down that the King obtains ½ of the ancient hoards and metals by reason of his giving protection, and because he is the lord of the soil (adhipati) Buhler took a cue from Medhatithi, the commentator on Manu, and came to conclusion that the ownership of all land was vested in the king. If the state resumed land of any cultivator, it was because of the breach of certain obligations by the latter, which might include even the non-payment of taxes. On the other hand, the sovereign claimed rent from the crown lands, where his position was analogous to the absolute owner and the cultivators were his tenants. However Jaimini, the famous author of the Mimamsa sutras, who lays down that the emperor cannot make gift of the whole land of which he may be the ruler, for the earth is common to all. Thus the theory of the ultimate royal ownership is built on a shaky foundation. However the right of state ownership cannot be altogether denied in any period. With the growth of the royal machinery and the establishment of the unified empire of the Mauryas, a large unclaimed area of land came under the authority of the crown. After the breakup of their empire till the rise of Satavahanas and Pallavas in the Deccan, and their successors and feudatories played a historic role in the political system of ancient period. Thus in the then state of affairs, it would not be wrong to consider that the monarchical states in our period retained direct control over most part of the land newly conquered areas. The rights of the state over the un-occupied waste land were
undisputed. The provision for pasture grounds was made on uncultivable land.\textsuperscript{103} These grazing grounds along with the waste or fallow land were under the direct ownership of the state.\textsuperscript{104} But the people were allowed to make use of the same.\textsuperscript{105} However, the waste tracts were also reclaimed by the state for the establishment of the new settlements\textsuperscript{106} and consequently the development of agricultural pursuits.

Mines were a state monopoly. It was the duty of the King to keep in good repair the mines operating from the past and also to set up new ones. The royal ownership of mines is referred to in the Arthasastra,\textsuperscript{107} in the account of Pliny,\textsuperscript{108} the Milindapannha,\textsuperscript{109} the Manusmriti,\textsuperscript{110} and the Mahabharata.\textsuperscript{111} A host of inscriptions of our period mention the state monopoly of salt.\textsuperscript{112} Thus, we may conclude that the state had direct ownership of the royal domains, which also consisted of fallow and arable lands; it had indirect rights on the private lands and realized revenue for the proper execution of the sacred duty of the protection.

Another type of ownership we notice with regard to the village residential sites and some lands adjacent to it like the sites for laying haystacks, cattle pens, threshing floor, burial ground, village tank and some pastureland for grazing the cattle, which are left for the common use. These lands actually remain under the enjoyment of the villagers (community) ever since the pre-historic people first founded the village, at least in the case of all the old villages. The theory of communal ownership of in this period is mainly built upon the basis of a reference by the Greek writers. This is said to be a survival of the primitive Indo-Aryan village system.\textsuperscript{113} The pasture lands around the village were held in common by the villagers from the time of the Vedas.\textsuperscript{114} In this period, they were under the direct ownership of the state. But the
people were allowed to enjoy the traditional rights of grazing their cattle. Kautilya\textsuperscript{115} and Manu\textsuperscript{116} urge the King to make special provision for the common pasturage. This is perhaps, the reason for the rulers to honour the age-old privileges of the villagers and exclude these lands from the purview of taxation and other royal laws. The village civic body under the headman gramani,\textsuperscript{117} exercises ownership over all these lands of common use. The village headman or chief was appointed by the State,\textsuperscript{118} but his selection was sometimes hereditary.\textsuperscript{119} Kautilya recognizes the authority of the headman.\textsuperscript{120} Taxes, if any like grazing tax are collected by the civic body. The objects of common utility\textsuperscript{121} such as the village gate, the village pond, the irrigation tanks, roads, bridges, parks, along with joint and common defence of village property and sometimes-collective undertaking of cultivation of fields should not drive us to a hasty conclusion that there was communal ownership of cultivable land in such organized villages. The Arthasastra clearly lays down that “those who with their united efforts construct on roads, buildings of any kind (setubandha) beneficial to the whole country, and who not only adorn their villages but also keep watch on them, shall be shown favourable concessions by the king”\textsuperscript{122} The king if wanted to take over the village lands had to take the approval of the village headman, whereas it was not required in the case of other agricultural lands. From the above, it is clear that the joint and communal ownership of land existed among during the period under consideration. In the waste and un-occupied land, the rights of the people were subject to the royal authority to which these vast domains belonged.

As regards the individual cultivator, he has also possessed a kind of ownership over the land, which he inherits or purchases from those who first brought it under the plough. He cannot be deprived of his right even by the king for no valid reason. It is
the basic dharma of the king to protect the subjects. For providing such protection, he is entitled to collect taxes from them. For the prosperity of the kingdom also the king has to safeguard the individual’s secondary right of ownership on the land. It is interesting to note here that the references in the early Vedic literature show unmistakably that the idea of individualistic theory of landed property was known to Indo-Aryans. The early Dharmasutra, Apastamba tells us that the landowner could let his land against a certain share of the produce. We further learn from the ancient Jurists that the king should protect the property of infants and minors until they attain majority or complete their studentship. Kautilya enjoins the king against any harm done to the property of others. The state could appropriate and distribute those holdings, which had no boundary marks and were no more enjoyed or used by any person. This shows that the royal hand could not lay hold on the lands possessed by the peasant proprietors probably without sufficient reasons. Patanjali refers to the private ownership in arable lands. Individual owners in arable and homestead lands find mention in the Suttanipata. Regarding the origin of landownership, Milindapanha says that the person who clears the forest and makes the land fit for cultivation becomes its owner. This is corroborated by Manu, who says that the field belongs to him who clears the forest, and the piece of unclaimed land was supposed to confer on the individual the title to that land.

The literary sources like Jatakas and other Pali canonical texts reveal a rural economy chiefly based on private ownership of land. The grants of piece of land or fields by the individuals were considered auspicious and such grants were especially made for religious and charitable purposes. The elaborate rules on sale of land fully recognize private property. Thus, the ownership implied the objects being used by the
owner as he pleased. He could use, alienate or destroy the same. Sale, gift and mortgage is the attributes associated with the ownership of land, which our lawgivers hold in esteen. Over and above, the long possession was considered another lawful mode of ownership. Manu suggests that the king should keep in view the long continued possession as one of the means to mitigate land disputes between the land holders. Similarly, the later law giver, Yajnavalkya opines that enjoyment of a certain property at least for three generations constituted legal ownership. The rule in the Arthasastra provide sufficient protection to the individual land owners. We are told that if a holding is taken possession of by another on some reasonable grounds, which may probably be realization of debt, the latter shall be made to pay to the owner some rent, the amount of which is to be fixed after proper consideration of what is necessary for the subsistence of the cultivator of the holding by him. Again, the individual did not forfeit his land even if he was not the cultivator. The person who cultivates another man’s neglected land should restore the same to the latter after five years on obtaining a compensation for the improvement of land. Furthermore, if a person caused damage to the seeds sown in the field of other, he was made to pay suitable compensation to the sufferer. Yet the rights of the land owners were limited to a certain extent.

In the sale, gift and land dispute, the village elders (grama vruddhas) played a decisive role subject to the authority of the king. The tax payer could sell and mortgage his field to the tax payer alone and no one else, and he was required to settle in a village inhabited by tax payers. Nevertheless, the private land owners were not dispossessed of their rights unless they failed to pay taxes to the state. As long as, they paid royal dues, their rights to patrimony seem to have been fully secured. The
management of land techniques that were in vogue attests that the kings of those days must have enforced laws to promote agriculture. Thus Manu enjoins the king to punish those who steal agricultural implements. 143 Those who sell bogus seeds or sow the already used seeds, or destroy boundary marks are to be punished by mutilation. 144

The above discussion proves that various land managerial measures like well defined land tenures and rights of cultivators, classification of land, community enjoyment and utilities were undertaken towards stepping up agricultural production in the region by the rulers, under consideration, during their respective rule. The state expanded agriculture by bringing more virgin land under plough by way of land grants. It appears that the state expanded agriculture by colonization and encouraged surplus population to settle in such newly opened areas. Such people or cultivators and others engaged in colonizing wastelands and bringing more land under cultivation were provided with facilities such as the advance of grains, cattle and money.
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86. Strabo, Op.Cit. XV, i, 50


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