

LAND CLASSIFICATION IN ANCIENT INDIA  
(2500 B.C.—A.D. 600)

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(Received April 23, 1966; after revision May 20, 1966)

Land classification relates to grouping of lands according to their suitability for producing plants of economic importance. The utilitarian object of modern soil survey and soil classification is to assess inventories of soil resources and their proper land use. The modern concept of land classification for land use planning is described as the determining of types of production, use and service that can be obtained from the land that will yield the highest social and economic benefits to the people dependent thereon. *Pari passu*, with the tremendous development in modern agricultural science, it seems interesting to look back to the culture in ancient times. Agriculture was the mainstay of the people in ancient India. It is but natural to enquire into their knowledge of soil and lands and how this knowledge was utilized by them (2500 B.C. to A.D. 600).<sup>1,2</sup>

The ancient Indian cultivators comprised a wealthy and respectable section of the people and possessed a fair knowledge of land and its proper utilization, seasons and proper period of cultivation, selection and treatment of seeds, rotation and other cultural practices of crops, manuring for crop production, diseases of crops—their prevention and protection, etc. One will be filled with astonishment and admiration if one looks into the elaborate injunctions, cited in the *Vedas* (c. 2500–500 B.C.), *Arthaśāstra*, the *Bṛhat-Saṃhitā*, *Kṛṣiparāśara* (c. 1300 B.C.), and the *Purāṇas* (c. A.D. 700), etc., regarding the selection and treatment of seeds, extensive instructions regarding the use as manures of animal excreta, fish and bones, beef and fish-washings, various kinds of mixtures and decoctions.

The land and its proper utilization occupied a prominent position in agriculture and the agriculturists in ancient India were quite conscious of the nature of soil and its relation to the production of specific crops of economic importance. The vast knowledge acquired by experience has become tradition and been handed over from generation to generation, though a major portion has been forgotten and become a story of the past. These instructions, very intelligently and ably, are moulded in the form of pastoral songs, maxims, proverbs, etc., and are some sort of guidance to the peasants. The peasants were trained enough for the choice of a particular soil for a particular crop.<sup>3,4</sup>

According to fertility soil was mainly divided into two classes, *urvarā* (fertile) and *anurvarā* or *ūṣara* (sterile). *Urvarā mṛttikā* (fertile soil) is again subdivided into different kinds with respect to crops; for instance, *yava* (barley), *tila* (sesamum), *vṛhi* (rice), *mandiena* (mung), etc. *Anurvarā mṛttikā* (sterile soil) is also subdivided into *ūṣara* (salt ground) and *maru* (desert). The soil watered by river and that watered by rain are respectively called *nadīmāṭṛkā* and *devamāṭṛkā*.

Although the exact composition of the different kinds of soil was not known, from the following typical maxims of Khanā it is evident that they made extensive observations about them and, from experience, accumulated a masterly knowledge regarding the characteristic suitability for the cultivation of different kinds of crops.

‘Sandy soil is suitable for the cultivation of *āus* paddy and clayey soil for that of jute.’

‘Your expectation will be fulfilled if you cultivate *pattol* (*Trichosanthes dioica*) in sandy alluvial soil.’

‘If arum is sown on the banks of a river, it grows three cubits long.’

In the *Arthasāstra* (c. 300 B.C.) we find an enumeration of the suitability of different lands for the cultivation of different crops.

‘Lands that are beaten by foam, i.e. banks of rivers, etc., are suitable for growing pumpkin, gourd and the like; lands that are frequently overflowed with water for long pepper, grapes and sugar-cane; the vicinity of wells for vegetables and roots; low grounds (most of lakes, etc.) for green crops, and marginal furrows between any two rows of crops are suitable for the plantation of fragrant plants, medicinal herbs, *khus khus* roots, and the like.’

Caraka divides land into three classes, namely *Jāṅgala*, *Anūpa* and *Sādhāraṇa* according to the nature of the soil and climate (see ref. 3).

1. *Jāṅgala region* (literally means dry places—plants xerophytes).

2. *Anūpa region* (literally means marshy or swampy and watery—plants littoral or inland). The region is thickly overgrown with forests, bowers and trees in flowers encircled by verdant trees and tender creepers. The land is covered with dense forests of *hintāla*, *tamāla*, *nārikela*, etc.

3. *Sādhāraṇa region* (literally the ordinary—plants mesophytes)—the region which is endowed with creepers and plants and trees of both the classes, i.e. the *vānaspatīs* and *vānaspatvas*.

Kauṭilya in his *Arthasāstra* mentions that 16 *dronas* of rain fall in the country of *Jāṅgala* (dry places), half as much more in *Anūpa* (moist) countries; as to the countries which are fit for agriculture (*deśavapanam*) 13½ *dronas* in the country of *Aśmakas* (Maharashtra); 23 in *Avanti*; an immense quantity in *Aparāntam* (Konakana) and the foot of the Himālayas. The author finally directs that ‘Lands that are beaten by foam (*phenaghatah*, i.e. banks of rivers, etc.) are suitable for growing *vallīphala* (pumpkin, gourd and the like); lands

that are frequently overflowed by water (*parivahanta*) for long pepper, grapes (*mṛdvikā*) and sugar-cane; the vicinity of wells for vegetables and roots, low grounds (*hariṇīparyantaḥ*)—moist bed of lakes for green crops; and marginal furrows between any two rows of crops are suitable for the plantation of fragrant plants, medicinal herbs, cascus roots (*uśinara*), *hira* (?), *beraka* (?) and *piṇḍāluka* (lac) and the like.<sup>5</sup>

The sage Kāśyapa, in a treatise on Agriculture<sup>6</sup> has given the diversion of the earth, according to its fitness for particular crops into hilly, stream-irrigated forest and pasture land, etc. The injunctions given by him for selecting a land best suited for cultivation are as follows :

‘The land should be clean, free from pieces of bones and stones, husk and wild grass, and its soil should be soft, strong, cohesive and moist, slightly reddish and dark in colour. Its surface should be level, without pits, chasms or mounds and the soil should emit pleasant smell.

It may not be surcharged with water or be watery at all times. It should be conducive to the rapid sprouting of seeds and be easy to plough. It may be covered with cud of bulls and may abound in beneficent beasts and insects. It should be compact soil, heavy in weight and fit for the luxuriant growth of herbs and free from brambles and dry dung.

The land is of five kinds, viz. the *Brāhmaṇa* land, the *Kṣatriya* land, the *Vaiśya* land, the *Śūdra* land and the land of mixed qualities.’

Classification of soil was also based on two grounds—medicinal and economic. The medical authorities, like Caraka and Suśruta, had in view the efficacy of vegetable drugs which depends on the nature of soil in which they grow. And politicians like Chāṇakya cared for the productivity of different types of soil, an attention to which is necessary on the part of a good government to prevent famine.

The classification and examination of lands as suggested by Shri Misra Cakrapāṇi in *Viśva-Vallabha*<sup>7</sup> are described below:

Land is of three kinds, viz. arid, wet (i.e. marshy) and moderate (i.e. neither too dry nor too wet), and is distinguished by six tastes which can be known from the colour of the soil (S1. 1).

Gray-coloured, pale-white, black, white, red and yellow soils are sweet, sour, salty, bitter, pungent and astringent in taste respectively according to the ancient tradition. In the opinion of the author they can be known with certainty by tasting the soil (S1s. 2-3).

Land that is littered with ant-hills, pits and stones is saline and gravelly and has water at great depth. It is poisonous as far as the planting of trees, etc., is concerned (S1. 4).

In a region where trees and plants are blighted with frost and in a place (?) littered with stumps, a garden should not be laid (S1. 5).

Land in which the water is near the soil and is soft is best suited for planting trees. It is in such a place that a garden should be laid for welfare in this as well as the other world (S1. 6).

*Jalā Bhūmi* : *Kṛṣi-sūkti*, a comprehensive book on 'Agriculture Science' attributed to Kāśyapa (see ref. 6), classified the land into (1) wet lands for paddyfields, named variously: *śūlī bhūmi*, *jalā bhūmi* and *śasya bhūmi* and (2) dry lands called *adhaka bhūmi*, *tara bhūmi* and *ūṣa bhūmi*. Lands have also been classed according to their suitability for particular crops.

The land is of three kinds, viz. arid, wet and moderate (neither too wet, nor too dry). Again it is distinguished to be of six kinds from its colour and taste (S1. 35).

From colour it is distinguished as black, pale, dark-red, white and yellow respectively, and from taste as sweet, sour, salty, pungent, bitter and astringent (S1. 36).

The land which is vitiated by poison, stones, white ants and holes (of vermin), or is saline or gravelly, or has underground water too deep, is not good for the planting of trees (S1. 37).

The land which is of a mild colour like the sapphire or the plumage of a parrot, or is of the colour of conch, *kunda* (*Jasminum multiflorum*), or the moon, or is bright like molten gold and vies with the *campaka* flower, is considered as excellent (S1. 38).

On a land that is even, that has water closely and is green with grass and trees, all sorts of trees grow at their proper places (S1. 39).

Neither arid nor wet land is good. It is the moderate land (which is neither too wet nor too dry) on which, no doubt, all kinds of trees can grow (S1. 40).

#### REVENUE SYSTEM OF LAND CLASSIFICATION

The evidences show that land revenue in ancient India, as in modern time, was based on income from land or, in other words, the revenue was rated according to the productivity and kind of soil. The following passages are quoted from Bose<sup>8</sup>: 'Manu fixes it between 1/6, 1/8 or 1/12 according to the quality of the soil (VII, 130). Gautama raises the lower limit to 1/10 (X, 24). Śukra's schedule gives 1/6, 1/4, 1/3 and 1/2 according to the nature of soil, rainfall and irrigation facilities (IV, ii, 227-30). It is noticeable that there is a gradual rise from the moderate traditional rate of 1/10. The *Arthasāstra* in its characteristic fashion substitutes 1/6 for the customary 1/10 in the story of the beginning of kingship (I, 13) . . . But elsewhere the *Arthasāstra* significantly recommends upland (*sthala*) and low land (*kedāra*) to be entered separately in the field register of the *gopa* and enjoins upon the revenue officer a threefold gradation of villages after the manner of Gautama and Manu (II, 35; cf. *Śuk.* IV, ii, 220 f). This, together with a similar

reference in Book V, Chapter II, indicates that differential rates for different classes of soils are intended. The *Agnipurāna* again mentions rates between 1/6 and 1/8 for different kinds of paddy crops. Thus, the assessment varied according to the quality of land and the nature of the crop; the *ṣadbhāga* was only a traditional or average rate, not the fixed or universal rate, in this respect resembling somewhat the "tithe" in English fiscal terminology.<sup>7</sup>

Manu, the *Arthaśāstra* and the *Śukranīti* pre-suppose a careful gradation of land, survey and measurement, calculation of outturn as well as expenses per unit of land and so forth. We find in the *Arthaśāstra* and the *Smṛtis* not only stringent rules about leaving a good producer's surplus but also a classification of soil on the basis of fertility and differential assessment on the same. The King's share did not necessarily mean a fixed share. It was determined by consideration of fertility of the soil and by the needs of the State or of the cultivator. The system of measurement and survey and differentiation of soil according to productivity also indicate that land revenue assessment was not permanent but revised at intervals although a constant revision was not necessary.<sup>8</sup> Megasthenes states that Maurya officers were most likely concerned with the measurement and supervision of alluvial deposits for revenue purposes.<sup>10</sup>

#### REFERENCES

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- <sup>2</sup> *Agriculture in Ancient India*, Indian Council of Agricultural Research, New Delhi, 1964.
- <sup>3</sup> Majumdar, G. P., *Upavana Vinoda*, published by the Indian Research Institute, Calcutta, 1935, pp. 9-11.
- <sup>4</sup> Gangopadhyay, R., *Some Materials for the Study of Agriculture and Agriculturists in Ancient India*, N. C. Mukherjee & Co., Serampore, 1932, pp. 43-45.
- <sup>5</sup> Shyama Sastri Ed. 1915, *Kautilya's Arthaśāstra* (321-186 B.C.), Ch. XXIV, 116-117, pp. 143-145.
- <sup>6</sup> *Kāśyapamuni-Kathita Kasapiva-Kṛṣi-Sukti* Manuscript No. 28—Kr. N, available in Adyar Library, Madras XXXVIII. 1.8, 63419, a comprehensive text on agricultural science, assigned to Muni Kāśyapa.
- <sup>7</sup> Misra Chakrapani, *Viśva Vallabha* (Manuscript, in MSS. Collection No. 195, available in Vallabha Vaiṣṇava Matha Library, Nathdwar, Rajasthan; a text in 9 cantos on Agriculture and Horticulture, Botany, etc.).
- <sup>8</sup> Bose, Atindra Nath, *Social and Rural Economy of Northern India (c. 600 B.C.—A.D. 200)*. Firma K. L. Mukhopadhyay. Calcutta, 1961, p. 154.
- <sup>9</sup> ——— *loc. cit.*, pp. 156-158.
- <sup>10</sup> ——— *loc. cit.*, p. 161.